

The story of the

commodore

**C64**

IN PIXELS

Chris Wilkins

POWER









In memory of Fergus McGovern  
1966 - 2016

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## Commodore 64

The 'breadbin'  
Commodore 64 close-  
up and personal.

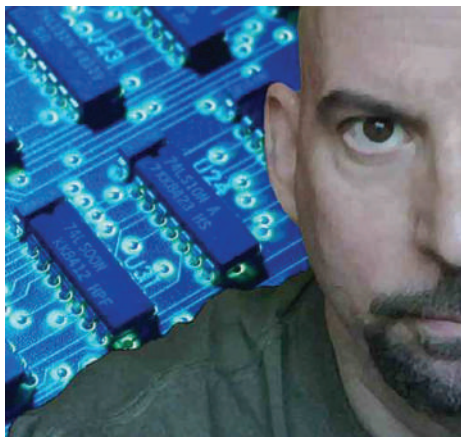






# foreword

## By Bil Herd



I remember walking into Commodore/MOS very clearly – the hallways had a kind of engineer's pachinko parlour type quality with the blips and bleeps of video games and monitors displaying vibrant colour were everywhere.

In the R&D lab were C64's in various stages of disembowelment. This was a real treat as it saved me disassembling one while still being interviewed for a job I might not get.

Bob Russell who was interviewing me turned to a keyboard, hit the up arrow a couple of times and then hit ENTER. My jaw literally dropped – what I saw was something I had only heard about, a full screen editor. Something now so simple

yet completely missing on multi-thousand dollar business machines at the time and about to be standard on every C64. I jabbered and pointed and asked, and Bob confirmed. I had just fallen for the C64 and unknowingly the work product of John Feagans who wrote the code that was making me salivate.

Then there was the smell. I was used to the odour of 'unwashed programmer' but this was something more. We were after all on the second floor of a chip foundry – a place that takes dirty sand and metamorphoses it into sounds and colours and computation.

There were actual chip wafers lying around and later I would find out just how far one could sail when thrown correctly and how they shattered like glass when you tried to cleave one using the edge of your desk.

It soon became obvious that Commodore was a company with a small group of experts that exuded a passion and excitement for what they did.

It was a decision making environment; you didn't complain about a chip that didn't do what you wanted, you changed the chip or you changed the design in such a way that would affect millions of units.

When the time came to design the Commodore 128 I had a profound appreciation for the software developers and the users of the C64 as well as the capabilities of our still small R&D group. I had been the engineer on the series of computers known internally as the 'TED' which had been targeted as a low cost

business computer system (Text Display) that had lost its way in the absence of Jack Tramiel. This system was not compatible with the C64 nor was it meant to compete with it – it scared the life out of the developers that went so far as to waylay me at the CES show that year to let me know this.

The next year, with Jack now gone, we stopped getting marching orders from those on high, so a group of us jumped into a void and started a project that would go on to become the C128. I remember the day that Fred Bowen and I agreed that we should make the new machine be compatible with the C64 to whatever degree we could. One of the reasons we did so was to give something back, so

that the developers knew that their hard work (and the user's massive collections of games) would work on the new machine. It also didn't hurt to be compatible with the highest selling home computer of all time.

Not bad for a pile of dirty sand.

*Bill Kend*





## Roger Kean

As editor of Zzap! 64 and the co-owner of Newsfield Publications, Roger had a close affiliation with the Commodore 64 throughout the 80s. Here, with transcripts from one of the last interviews with Jack Tramiel before his death, Roger tells the C64 story...

**I**ts detractors – in Britain mostly ZX Spectrum owners – used unflattering nicknames such as ‘Commode’ or the ‘Condom’, and even those who loved it called it the ‘breadbin’ on occasion, none of which stopped the Commodore 64 from becoming the best-selling computer in history. Some owners called it CBM64, some C64 but for most owners it was simply...

### The C64

The machine that became the best selling computer in history came from a long keyboard and electronic heritage, ushered into being by a man whose enduring motto was, ‘We need to build computers for the masses, not the classes.’

A Polish survivor of Nazi death camp Auschwitz, Jack Tramiel was born Idek Trzmiel in 1928. In 1947 he emigrated to the United States and joined the Army, a decision he never had cause to regret. The new immigrant set about discovering America. He asked himself, ‘Who are these people who call themselves Americans? I was in a barrack with fifty other men and everyone was from a different state, from a

different city.’

Tramiel had grown used to getting up early in the morning during his time in Auschwitz, so a 5 o’clock reveille didn’t pose the problem it did for the rest of the men. ‘I had to go around with a pail of water to some of them and just wake them up. In a matter of six weeks I got a temporary promotion to sergeant because I did that.’

His wife was still stuck in Germany and so after completing his sixteen weeks of basic training Tramiel anticipated being returned there to join the huge American contingent and so be reunited with her. But the army dashed his hope and issued orders for him to go to Alaska. ‘I had to find a way to change these orders and I was told that that was very, very difficult to do in the army.’

Tramiel is remembered as a go-getter or a bully, depending on individual points of view, and he tackled army bureaucracy head on by badgering his lieutenant. Never taking ‘No’ for an answer, he went farther up the ladder, right up to his commanding officer, a four-star general. ‘He had my portfolio, my background, and he told his [adjutant], “Give this soldier whatever he



wants.” I got orders to go to Germany. But in the meantime I got a telegram from my wife that she was on the way to the United States. So I had to go back to the same general and ask him to reverse the orders, and he did that too.’

But they didn’t send him to Alaska. Tramiel was settled in Manhattan, where the US Army put him to work repairing typewriters. Today, that might seem like an odd occupation, or even requirement, but during the Second World War and for several years in the aftermath, the US Army ran on typing machines. Some paratroopers even parachuted into hostile territory with a compact Underwood strapped to their backs, ready to type up running reports. The War Department scooped up every Underwood, Remington, Royal and Corona they could from the civilian market and pressed them into service. So extreme was the demand that it became illegal for a civilian to purchase a typewriter during the war as all existing stocks were turned over to the Quartermaster Department. An indication of the importance of the typewriter to the war effort, and of the numbers involved was highlighted by the crimp put into the supply chain when one of the few ships sunk off Normandy in the D-Day landings went down with a cargo of 20,000 typewriters. The Army set up typewriter repair schools, which was the most common machine the Quartermaster’s mechanics would repair, and the Army and other services ran on paper—in quintuplicate.

Typewriters, then, were big business



A Corona typewriter (US military issue) from the early 1940s.

during and immediately after the war, and they were to be young Tramiel’s passport to success. ‘I got some training at IBM in upstate New York. I did this for another year or so and then I was discharged. So I went to work for a small company in Manhattan.’ That was in about 1950, but the business he’d joined proved to be unsound and after about three months his boss told him he was unable to pay the weekly wage.

*Five years spent locked up in Nazi camps gave Tramiel a yearning for freedom, but he’d also absorbed the German work ethic.*

Tramiel’s reaction was to go and find business. “How are you gonna do that?” he says, and I said, “I used to repair typewriters

in the Army and I can convince them that they can do it at a better price by giving the work out than by doing it themselves.”

He returned with a contract for 2,000 typewriters to repair and his boss Ruby was ‘in heaven’... though not sufficiently saintly to give his saviour a rise. ‘I waited a month, six weeks, and I was still drawing fifty dollars a week. So it came Friday and I told Ruby, “I’m quitting. I’m giving you one week and I’m gone.” He says, “Why?” I says, “The reason why is because you are very dumb. A person who brings you that kind of a contract, you should definitely reward them, which you didn’t.” He said, “I’ll give you whatever you want.” I said, “It’s too late,” and then I quit and I started to look for work myself, and that’s the way I started.’

Five years spent locked up in Nazi camps gave Tramiel a yearning for freedom, but he’d also absorbed the German work ethic. ‘I had known the German mentality and how they work. And I wanted to be in a country where there’s

freedom. When I was in the army I learned who the Americans are and I came up with the idea that if you work hard, you can do whatever your ability is. You can go right up to heaven. When I looked

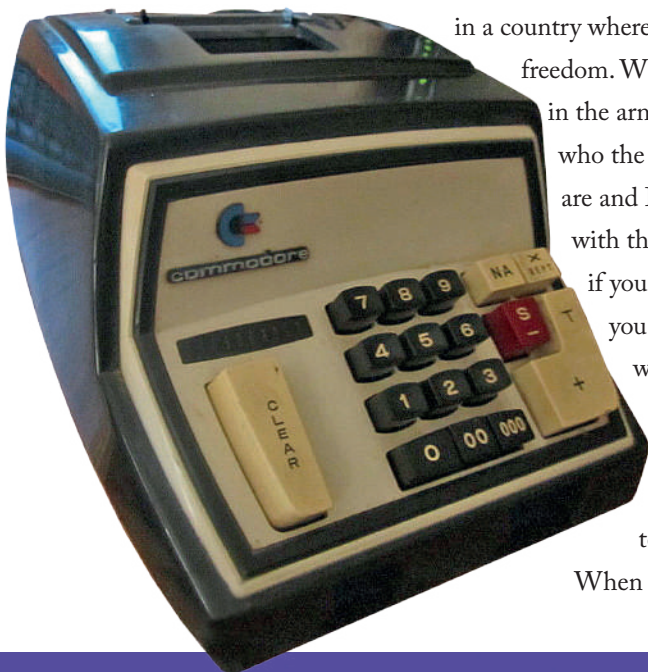
around where I am in this United States, I could see that people are being trained to follow but not to lead – I believe there was a shortage of conductors but there were many musicians and [it’s] important to assemble a good orchestra and then to know how to conduct, and I felt I can do that.’

*“When I was in the army I learned who the Americans are and I came up with the idea that if you work hard, you can do whatever your ability is.”*

Operating from an office in the Bronx, he made a deal in the early 1950s with a company based in Czechoslovakia to sell their typewriters in North America. At the time the U.S. banned any imports from Warsaw Pact countries – the Communist trade area, of which Czechoslovakia was a member.

To get around this embargo, in 1954 Tramiel founded the Commodore Portable Typewriter Company in Toronto, importing the machines in parts for assembly there in Canada so they could be exported to the US ‘clean’ – a sort of typewriter laundering business. In this he was assisted by investments from several sources, such as financier Irving Gould and most importantly from the Canada-based Atlantic Acceptance Corporation.

Commodore Business Machines Model 202 Adding Machine of the 1960s.





# COMMODORE 64

## Commodore 64

The original 'breadbin' Commodore 64 introduced to the world in 1982 by Commodore International. The sales of the C64 reached an estimated 17 million units making it the highest selling single computer model of all time.



# COMMODORE 64C



## Commodore 64C

The C64C is a redesign of the original Commodore 64 and graphically and processor wise is the same. It appeared in 1986 and though software compatibility was high, there were many expansion peripheral issues due to the changes in architecture and case design. Differences were also evident in the SID chip as it used different filters, thus making some channels in popular tunes inaudible. Current true retro fans therefore favour the sounds of the original 'breadbin' model.





## It's All in the Calculation

By the decade's end the flood of much cheaper Japanese imports made selling the Czech typewriters unprofitable and Tramiel turned to the more lucrative business of adding machines, with the name of Commodore Business Machines, Inc. 'I got in through some friends I had in Europe, especially in England, and got a franchise for an adding machine to sell in North America. To me that was an extension of the typewriter. After a year and a half, the sales were so good I wound up buying the company in Berlin (with 2,000 employees on the payroll), which was manufacturing this adding machine. The idea – to have a good product at a low price – you have to cut out the middlemen, because it's the only way you can control it. But you cannot do it if you have no money so you have to do it slowly, not to become rich in one day. It took me twenty-five years to make the first million dollars.'

In 1962 Commodore went public, but four years later ran into trouble when the sale of imported adding machines became unprofitable. To compound his problems, Atlantic Acceptance Corporation was declared bankrupt. Worse still, the Canadian government's investigation revealed that Atlantic had been producing fraudulent financial reports to limit its corporation tax liability. The bankers facing losses from this debacle turned for redress to companies AAC had fingers in, and among them sought to take control of Commodore. Jack Tramiel had to take urgent steps to raise cash.



Commodore PR100 programmable calculator, 1978.

On one hand he gave the Canadian financier Irving Gould 17 per cent of the company in exchange for a reputed \$400,000. Gould demanded the position of chairman, while Tramiel retained his role as president. On the other hand he negotiated the sale of his Berlin adding machine company to Litton Industries (now a part of the Northrop Grumman Corporation). He made a good return on the deal: having purchased the company for \$1 million Litton paid \$7 million for it. But it left Tramiel with a gaping product hole.

'The question was, how do I continue business, if [the adding machine] was one of my major products? So I told Litton that the only way I can sell to them is if they will give me one year's production exclusively to me and also the rights to manufacture the same product someplace else.'

Someplace else had to be cheap in order to bring machines to market at the lowest possible price. Litton's board agreed to the deal and in the following week Tramiel flew to Japan and contacted Ricoh. 'They made cameras, printing and photocopying machines. And we went into a partnership to produce the adding machine, and in twelve months' time I had the same adding machine made in Japan for half the price.'

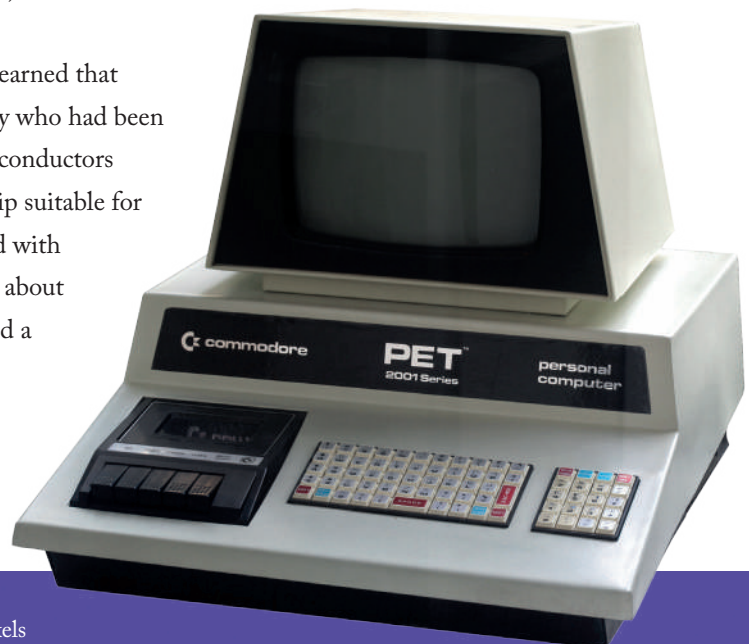
However, it turned out to be a short-lived window of opportunity because other Japanese firms woke up to the potential of America and – as they had with typewriters – very quickly began to flood the market with even lower-price adding machines. Japan had something else to offer, however, and it was there that Tramiel ran across the next generation of adding machines – the calculator. 'I made a contract with Casio that I will represent them in North America but it has to be with my name, not with theirs. It has to be named Commodore.' In fact Commodore International Limited, as he renamed the company.

During 1967 he learned that firms in Silicon Valley who had been manufacturing semi-conductors were developing a chip suitable for use in calculators, and with his Litton exclusivity about to end Tramiel needed a replacement product. In Silicon Valley he saw a way to manufacture his

own calculators for a cheaper price than the Casio calculators he represented. 'I [went there] in 1968 because I like to be where the action is, and I made a deal with one of the companies. They actually made a chip for me and I assembled those calculators right there in the Bay area. The machine was selling for about \$400. The cost of manufacturing was about \$50 and to me this was robbing the public. So I reduced that price to \$200. That's retail. I was selling it in for \$100. But I was making good money and everything was going well.'

In the 1970s, thanks to the new design of ever more clever and compact chips, Commodore moved into programmable devices (mostly manufactured in Hong Kong). Among the more than 150 models, the PR100, released in 1976, set the pace for all of the competition. But by that time, another major change was on the cards. Tramiel's most important supplier of chips was Texas Instruments. TI manufactured the integrated circuits that powered most

Commodore  
PET, 1977.



# COMMODORE 64G



## Commodore 64G

The 'G' was the last model of the C64 to be realised and was based on the original 'breadbin' case. The motherboard inside the 64G is the same one as that in the 'C' and therefore inherits the same incompatibilities including the filtering SID chip changes. The C64G's case is white like the C64C and sports a green power LED.





# COMMODORE SX64 / DX64



## Commodore 64 SX/DX64

The SX was Commodore's first attempt at a portable computer and comprises of a 5" colour CRT monitor, an integrated 5 1/4" floppy drive and a detachable keyboard. The sheer weight of the computer, and the fact that it had to be plugged in to the mains to be used rather stretched the word 'portable'.





manufacturers' calculators... including their own products, which made TI and Commodore rivals. In 1975 TI decided to take a leaf out of Tramiel's book of business philosophy and cut out middlemen, going straight to market with its own line of low-cost calculators, undercutting Commodore's products.

### A Pet on the Back

'Texas Instruments decided that they will cut me off because I make much more money than they do and they wanna go into the business themselves. And I was stuck because I had a lot of inventory in distribution that I will lose a lot of money.'

As a consequence of Texas Instruments entering the calculator market Commodore lost in the region of \$5 million on sales of \$50 million. Tramiel had to move fast, or go under.

'So that just added to my thought that you have to be vertically integrated. When I thought what to do, the best thing was to try to buy a semi-conductor company. And I looked around and at the end I found MOS Technology.'

MOS Technology, Inc. of Norristown, Pennsylvania (pronounced as the letters M-O-S and not 'Moss') was struggling financially. According to Tramiel the company was haemorrhaging \$600,000 a month, so the acquisition came as a boon. Once again, Irving Gould stepped in with a loan guarantee of \$3 million, which financed the purchase of MOS. 'I got the company for very little money but as soon as I came in I had to straighten it



Jack Tramiel with the Commodore PET.

out so as not to lose that kind of money,' Tramiel said. 'They had about two hundred different projects which they were working, like R&D projects, and each one which I did not like I cut out.'

Along with MOS came lead chip designer Chuck Peddle, the man most instrumental in convincing Tramiel that calculators were a commercial dead end...

'He showed me a board and he told me, "Jack, this board – hooked up to a keyboard and into a display – can be a computer." I didn't know the difference between board and keyboard.'

***"I got more orders than I can manufacture! But then, how much should we manufacture?"***

But he did see the potential of tying up a typewriter, an adding machine and a television enough to ask his eldest son's advice. 'Leonard was going to school in Columbia, so I called him and I told him



Commodore  
VIC-20 computer.

what I have here.

He came down to take a look at it and he told me, “Dad I am working now on a computer as big as this room but this little board can do more than this whole big computer. That’s a very good idea.”

And it was.

*“I got orders in the first week for \$3 million, and that’s the way it was.”*

Ever the hard taskmaster, Tramiel gave Peddle and his design team a steep challenge. ‘I don’t know that much about it so what I will do is this: I will give Mr Peddle six months to come up with all these three parts in one box. If you have it, you have a job. If you don’t, goodbye.’

It didn’t take Peddle, working with Leonard Tramiel, very long to prove his vision, for in the following year out came his integrated computer with a very grand name – although Commodore’s Personal Electronic Transactor was soon better known simply as the PET.

Inside the six-month deadline, the PET appeared at the 1977 Consumer Electronics Show (CES) in Chicago to excitement and great interest. ‘I got more orders than I can manufacture! But then, how much should we manufacture?’ Tramiel ignored sage advice to seek answers from reputable market research agency

Archer D Little. ‘I remembered that IBM hired these people to see if {IBM} should get into the Xerox business or not. And they came back saying, “Xerox – that’s not gonna work.” So I said, “You expect me to pay them to tell me the same thing?” No, I took out six half-page ads in the Wall Street Journal and the New York Times. Let’s see what the public will come back with, I said. And I got orders in the first week for \$3 million, and that’s the way it was.’

### **The Home Computer Comes Home**

With a monochrome monitor, the computer did well in schools where its all-in-one design was an advantage, but it wasn’t exactly the home-use machine Tramiel had hoped for, where colour, graphics and sound were more important than number-crunching power. The response to his advertising campaign and the surprising number of orders that resulted did, however, convince Tramiel that the low-cost home computer was certainly the future – especially in Europe: ‘Commodore was

# COMMODORE 64GS



## Commodore 64GS

The concept was a good one - a cartridge based console with the innards of the Commodore 64. The promise was over 100 cartridge releases, though this was never quite realised. Unfortunately, the console was a missed opportunity for Commodore due to the lateness of its launch in 1990 - many of the 80,000 units made were never sold, their parts being re-used in the C64C.



# COMMODORE 128



## Commodore 128

The 128 was released by Commodore in 1985 - its enhancements over the 64 include 128KB of RAM, 80-column colour video output, a redesigned keyboard and case and the presence of a Z80 processor allowing the computer to run CP/M. The 128 offered nearly 100% compatibility in C64 mode - a mode that most of its users used!





strong in Europe because I had the distribution setup for the adding machine. So it was easier to me to go to the same people and sell the PET and it was not as cut-throat as it was here in the United States. There were more loyal people in Europe than here.'

That the compact home computer was the future seems to have been something few of his competitors had spotted. "There were many, many thousands of people, tens of thousands of people, who knew how to use a personal computer. They understood what it is. But the older generation of people in business, they did not realize how big their business is."

***[The VIC-20] was the best selling computer of 1982, with over a million units sold.***

Nevertheless, there was one other techno-seer on the scene. Commodore suddenly found itself up against two Steves: Wozniak and Jobs. The Apple II, released in 1977, as well as the Atari 8-bit machines, released in 1979, offered colour and graphics, which made the PET look outdated and outmatched – ironically, both manufacturers used the MOS Technology 6502 processor. In addition, the Atari 400 and 800 hooked up to a standard television set, which made them more flexible in use and cheaper to manufacture.

Enter the VIC-20, announced in 1980 and widely available by early 1981. The



VIC-20 enjoyed extraordinary sales levels, helped by typical Tramiel marketing, like the TV commercial featuring Star Trek's Captain James T. Kirk: "Why just buy a video game from Atari or Intellivision? Invest in the wonder computer of the 1980s for under three hundred dollars..." actor William Shatner warbled.

William Shatner  
(Star Trek's James  
T. Kirk) advertising  
the VIC-20.

The VIC-20 came about with co-operation from Commodore Europe and Japan, but without input from Chuck Peddle. 'He wanted to be in the more expensive computers,' Tramiel said dismissively. 'Mr Peddle is self-destructive. He is a smart, intelligent engineer but it's never good enough. When he has something which works, he's trying to improve it and he improved it so long until it dies. That's right. He doesn't understand that if you invest x number of dollars into a product, and if you're not the government, you have to get this money back. Money was not an important thing for him. The reason why I did not pursue Chuck Peddle's ideas...he always needed more

time, more time, more time. So I could see that he's holding back what I want to do and he is never finished. So I decided that I have a goal and a plan what I want to do and his plan is different. So we shook hands and said goodbye.'

The VIC-20 was the first of Commodore Business Machines, Inc products to be sold largely at retail rather than through authorised dealers as a business machine, and in its short shelf life it was a great success.

It was the best selling computer of 1982, with over a million units sold. Tim Chaney, before he joined US Gold, worked at Commodore UK selling the VIC-20 to high street outlets has said its success was as much down to the company's hardnosed marketing philosophy as it was to the machine's abilities. 'Jack Tramiel always argued that "business is war and we don't have competitors, we only have enemies".'

But if the VIC-20 was designed as an Apple-Atari-killer, it was its successor that would dominate and evict both rivals from the home computer market.

### **22 Million Sold!**

The Commodore 64 began its design life in January of 1981 when engineers working under Albert Charpentier at MOS decided they needed a new chip project. Charpentier said, 'We were fresh out of ideas for whatever chips the rest of the world might want us to do. So we decided to produce state-of-the-art video and sound chips for the world's next great video games.' Charpentier had been responsible for several of

the highly successful VIC-20 chips.

Counting on repeating the success Tramiel had achieved in challenging Peddle to create the PET in six months he passed down an even tighter schedule when Charpentier, Robert Russell (the VIC-20's architect and system programmer) and Robert Yannes (designer of the 6581 SID sound chip) proposed a low-cost successor to the VIC-20.

***He demanded the engineers develop a computer with 64 kilobytes of RAM in time for the Winter CES in the second week of January 1982.***

He demanded the engineers develop a computer with 64 kilobytes of RAM in time for the Winter CES in the second week of January 1982. That meant the team had just six weeks to accomplish the task. It seems incredible in these days of intensive, lengthy hardware development that they could achieve the impossible, but they did. Initially, the new computer was named either VIC-30 or VIC-40, depending on who you spoke to, but by the time it was presented in January it had been become the C64.

At the show, competitors gasped at the low price Commodore claimed their new beige baby – aggressively marketed as a games machine – would be when it hit



# It writes, rates, creates, even telecommunicates. Costs less, does more- the Commodore 64.



When Commodore introduced the 64, the industry suddenly realized that

there would be a computer in every home, school and business years before anyone ever dreamed.

That's because Commodore 64 halved the price of high technology: while you can compare the 64's capabilities with those of any sophisticated business PC, you can compare its price with that of an average television.



What can you do with it? Create with its high resolution Sprite Graphics. Add a printer and type with it. Add a disk drive to use

spread sheets and other financial

programs. Learn and play music through your home sound system on the 64's



professional quality music synthesizer.

Add a modem, and hook up with the vast computer networks through your telephone. In short, the Commodore 64 is the ultimate personal computer, at a price you can afford.



## COMMODORE 64







Jack with his son.

the shops. One part of the equation was the ownership of MOS Technology, which gave Commodore a vertically integrated manufacturing line; the other was Tramiel's gamble that the \$100-plus cost of RAM would drop to a much lower level by the time mass production began. The gamble paid off, and the first C64s came in at an in-house cost of around \$135, leaving Commodore with a handsome profit, even after deducting the costs of packaging, wholesale and retail discounts.

The first boxed computers hit US stores in August 1982 at a price of \$595 (roughly equivalent to \$1,500 in

2015). The much higher retail cost of competitors Atari 400 and 800, and Apple II offered an advantage to Commodore, and the machine dominated the low-end computer market for most of the 1980s. The picture was different in Britain, with healthy competition from the Sinclair ZX Spectrum, the BBC Micro and, by May 1985, the Amstrad CPC464. The Spectrum beat the C64 to market by seven months – a crucial advantage in a suddenly expanding games market – but it was also selling at less than half the C64's £349 initial price. (On release in April 1982 the 16K Spectrum cost £125 and the 48K model sold for £175, later reduced to £99 and £129 respectively.) However, marketed in the US as the Timex Sinclair 1000, the British-licensed machine was slaughtered by Commodore's aggressive marketing techniques. One trick was to offer a \$100 rebate on the purchase of a C64 to anyone trading in another video game console or computer. Some unscrupulous mail-order outfits and main street retailers offered

The packaging of the Commodore 64.





consumers a Timex Sinclair 1000 for a knockdown price, so the purchaser could send the Sinclair to Commodore, collect the rebate, and pocket the difference.

In mid-1983 Commodore upped the ante by dropping the price of the C64 to \$300 and by shopping around, prospective buyers could even pick up a brand-new C64 for as little \$199. At one point, the company was selling as many C64s in the US as all computers sold by the rest of the industry combined, and by the end of what the press dubbed the 'home computer war', Commodore had shipped some 22 million C64s.

### **Software Maketh the Computer**

Any computer – especially one designed primarily as a games machine – can only ever be as successful as the software that runs on it. The C64 had everything going for it: superior colour and graphics handling, amazing quality sound, a compact footprint, connectivity and, in time, a decent disk drive option (though cost restricted many UK users to cassette loading), but ultimately it was the software that propelled the computer to the delirious sales levels it enjoyed. In its recent past Commodore had dabbled in producing games software but they were half-hearted efforts and sales were generally poor. Additionally, Commodore's dealers grew to dislike Commodore's hard-nosed attitude toward them. Tim Chaney recalls a typical example of the treatment meted out: "There was this shop in Greenford, and the guy couldn't pay his bills and Commodore

were going after him to close him down. I remember saying to my boss Paul Welch, "I put six grand's worth of stuff in the shop, he was a believer but it hasn't worked for him, we need him. We need to show some good will." And Paul said, "Tim, when I need goodwill I'll f\*\*king pay for it." And that was the mentality of Commodore.'

### *And the games happened, in their droves, on both sides of the Atlantic.*

But with the C64, Tramiel had no real interest in supplying software. 'Software was not my most important product. I was not making software. So my idea is that the software community will make the software. Anytime I can buy a piece of the software and include it in the price of the computer, I will do it.' There were indeed from time to time bundled games packs with the C64, all dating from a time after Jack Tramiel's departure from the company, but all bought in from third-party software publishers. 'The rest of it, the community of software can do that on its own,' he said. 'I always knew it's gonna be critical but my idea was to support the software people whichever way I could.'

And the games happened, in their droves, on both sides of the Atlantic. In Britain, early American C64 product drove the phenomenal success of Birmingham-based US Gold before homegrown games began to muscle in alongside the American software. It has been estimated that some

US Gold – an ambassador for the Commodore 64 in the UK and Europe.



10,000 titles existed by the end of the Commodore 64's sales life, published by some of the greatest names in gaming history.

In Britain, Commodore was keen to wave the software support flag over its perceived main rival Atari. Early in 1985 David Tomkins, Commodore retail products manager, said, 'It's interesting to compare the C64's success with that of the Atari machines – they have a very similar technical specification. It's partly to do with the Commodore name. Following the success of the VIC-20 we had an extremely high reputation in the home computer market. This gave the C64 massive software support which the Atari never had.'

Ian Stewart at Gremlin Graphics backed Tomkins up. 'In terms of hardware the C64 is clearly superior to the Spectrum, but I think

the Atari machines have the edge on the Commodore. The problem for Atari in the UK is that it didn't get the support of software houses.'

At US Gold, Tim Chaney, never one to hold back, wasn't interested in Atari so much as the headache of 'downgrading'. 'The C64 is still the best machine to play games on. Here we have the task of converting C64 games onto the Spectrum, and believe me it's like drinking champagne and then drinking house wine afterwards.'

Games designer Tony Crowther tended to agree with Ian Stewart that Atari machines had the edge on the C64, but allowed that there was a long way to go. 'The C64 is still not being stretched to its full – no one's approached its full capacity, me included. The software's got a long way to go. In a year's time there will be stuff that's far better than the software around today.'

Taskset's Andy Walker considered the Atari an inferior machine to the C64. 'On the Atari there are only four meaningful sprites compared with eight on the C64. There's no doubt in my mind that the C64's hardware is the best home computer

Gremlin Interactive's Ian Stewart was an early fan of the Commodore 64.



hardware for games that exists. It's the fact that they bothered with two special chips, the SID chip and the VIC chip.'

### **A Change of Direction**

By the end of 1982, Jack Tramiel could look at his competitors and smile. 'A company like Apple, when they sold 50,000 computers per month, at that time we were selling 500,000 computers per month, so we must have done something right!'

Yet within two years he was gone from the company he founded and built to the giant corporation it had become. The cause was a rift between Tramiel and Irving Gould, who had effectively controlled the company since the mid-1960s. As Tramiel said, 'Irving Gould was the man who helped me out financially in 1967, so being a European I believe in loyalty and I gave him the job to become chairman.' The two men argued frequently. Tramiel did not believe in budgets on the grounds that when a budget was approved, it usually got spent to the last cent, even if much of the expenditure turned out to be unnecessary, and therefore wasteful. Every expense over \$1,000 he approved, which made life difficult when he was away on business or on vacation.

'In 1983 it was building up that my philosophy and his [Gould's] is totally different. His philosophy was to milk the company as much as possible and my philosophy was to build the company as big as possible.'

Visitors to the January 1984 CES noted that Tramiel looked an unhappy

man as he stood on stage and announced that Commodore had sold more than a billion dollars worth of products in 1983. His attitude puzzled those present, but there was a reason. 'One day I told him [Gould] that in case he cannot agree with my philosophy, I will quit by a certain date. That date came around, I went to see him. "Did you decide?" he said, "Yes it's gonna be done like I want it to be done." I said, "Look for somebody else."'

### ***Three days after the CES, Jack Tramiel announced to a shocked world his resignation as president of Commodore.***

The bitter disagreement must have been bubbling for some time and came to a head at a board meeting when Tramiel told Irving that treating the assets of the company as his own and using them for personal use was wrong. He told Irving that he couldn't do that while he was still president. Irving's one-word response was, 'Goodbye'.

Three days after the CES, Jack Tramiel announced to a shocked world his resignation as president of Commodore.

'I relaxed, took my wife, and I went on a world trip to say thank you to all my suppliers for all the years that they worked with me,' he said.

The suppliers may have been happy, but Commodore's dealers were less so. His

inflexible and autocratic rule had resulted in poor dealer relations everywhere, as well as a run of top Commodore executives. 'When somebody went too far, I just attacked them,' Tramiel said. 'I wanted to get how he's gonna answer and according to how he answers, he stays or he goes. I didn't wait to have the man who is not happy with the job and we are not happy with what he's doing.'

***"I relaxed, took my wife,  
and I went on a world  
trip to say thank you to  
all my suppliers for all the  
years that they worked  
with me"***

The January 1984 crisis was not the end of Jack Tramiel's career in computer manufacture. Even as he holidayed with his wife he took a phone call from his youngest son to learn that Warner Communications wanted to speak to him about purchasing the consumer division of Atari Inc. (the arcade division was separate), which was in serious trouble due to the very 'home computer war', Tramiel had instigated. The abrupt drop from revenues of about \$3.2 billion in 1983 to less than \$100 million – a drop of 97 per cent – led to bankruptcies among manufacturers of video game boards and consoles like the formerly popular Atari 2600.

The recession would last until the Nintendo Entertainment System's release

in 1985, which reintroduced cartridge-based gaming.

Back in New York, Tramiel formed a new company with sons Leonard and Sam, which he named Tramel Technology, the spelling underscoring that his name should be pronounced as 'tra-mel' and not 'tram-meel', and in July 1984 bought Atari. There was a sensible connection, since MOS supplied Atari with chips, although he considered Atari to be an entirely different business. 'On a computer you can do computing, on the Atari you can only play games. Atari also made computers but they did not know how to do it. Warner bought Atari for \$28 million. They were making a huge amount of money because they got in the business in 1972 and after a while it slowed down. But Warner, being in the movie business, did not know how to handle that and they felt by hiring people from big companies and with big experience in selling cereal or whatever this will make it. It seems that it didn't, so they came back to a person like myself.'

Warner wanted \$240 million. Tramiel played crafty and agreed to take over Atari but on the basis of caretaker until such time as the true net worth could be established. 'The company was losing between \$2–3 million dollars a month! So I had to go in and become a real surgeon, cut everything possible, which I did. I said, "We make the settlement in twenty-four months," and that's the way I bought the company. Instead of \$240 million I only paid \$24 million.'

Tramel Technology Ltd. was renamed



Atari Corporation and went on to produce the 16-bit Atari ST, the first model appearing in June 1985. Jack soon found himself embroiled in a war with Commodore over poaching several of their engineers, with lawsuits flying over the theft of trade secrets. A further outbreak of hostilities occurred when Amiga Corporation delivered its new 'Lorraine' chipset to Commodore. In the spring of 1984, Amiga Corp. ran out of funding for further development, and sought backing. Along with Warner-Atari, Tramel Technology was one of the larger investors. For his investment, in typical Tramiel style Jack wanted pretty much all the Amiga staff replaced, which didn't earn him any love points. So when the news was out about his purchase of Atari, a panicked Amiga Corp. fled to Commodore.

The spring agreement had obliged Amiga to deliver Lorraine to Atari in June 1984, but instead Commodore bought Amiga Corporation outright and took over Lorraine in return for paying Atari (and now the Tramiels) the amount they



had invested in the chipset. That failed to satisfy the Tramiels. Jack sued for damages and successfully obtained an injunction to bar Commodore producing anything with 'Atari technology'. This set back Commodore by months and the Atari ST hit the markets first. However, sales in the States remained sluggish, largely due to dealer reluctance to handle a Tramiel product, and when Commodore finally untangled itself from the injunction and after a slight technical hiatus the Amiga soon took the number one slot in the 16-bit race (the Amiga 1000, released in July 1985, suffered some production problems and wasn't fully available until early 1986).

Jack, with his sons Garry, Sam, Jack and Leonard after setting up Atari Corporation.



Before selling Atari to a disk drive manufacturer in 1996, Jack Tramiel at least had the satisfaction of seeing Irving Gould's Commodore collapse in ignominy.

He passed away on the 8th April, 2012 at the tender age of 83.

Jack, with the Atari logo in the background.

The Commodore 1541 disk drive.

## The Enduring Commodore 64

In spite of the inevitable desire of electronics companies to continually improve on their products (and incidentally oblige purchasers to upgrade continuously), the Commodore 64 proved resilient. Rumours spread as early as late 1983 that Commodore would discontinue the C64, but they proved groundless in the face of spectacular sales and the race of so many software publishers to get in on the sales act. In fact, Commodore attempted to discontinue the C64 more than once in favour of more expensive machines such as the Commodore 128 (1985), but demand remained strong. As Jason Marlin, technical director of Ars Technica says, 'How good was the Commodore 64? So good that, even when the new 128 model came out, most owners never moved beyond C64 mode (though this probably speaks more to Commodore's failure to achieve any traction with software developers on the new platform).'

In 1986 Commodore introduced the 64C with a redesigned, sleeker



128-style body, which the press saw as evidence that the C64 refused to die and that Commodore was not going to abandon its millions of fans in favour of the Amiga and 128. It was also the year that the company raised the C64's price for the first time, which was said to mark the end of the 'home computer war'.

Ironically, in spite of continuing popularity and support for the computer, in the early 1990s it was the 1541 disk drive that finished off the C64. Some in the business had seen the end coming in the assault of 16 and 32-bit machines, although it was the 8-bit Nintendo Entertainment System's enormous popularity that turned Commodore's global sales sluggish (seven million sold in 1988).

Electronic Arts' CEO Trip Hawkins said of the NES that it was 'the last hurrah of the 8-bit world'.

By 1990, demand in the US for the C64 had dropped substantially, although it continued to be popular in Britain and in Europe. In early 1994 Commodore announced it would discontinue the

C64 in 1995, and no wonder: while C64s

The Commodore C64C.



were selling for as little as £50, the by-then-essential disk drive cost almost twice as much to manufacture. One month later, in April 1994 Commodore filed for bankruptcy.

That, of course, was nothing to do with the beloved C64, but all to do with Commodore's failure to keep pace with the march of progress. The flagship Amiga was soon limping along behind the increasing computing power of PC-based machines, and Commodore's ambitions for the Amiga to find a position as a business and graphics design workstation never matched the PC or Apple's Macintosh range. Commodore UK survived the bankruptcy and made a bid to purchase all of Commodore International's assets, but failed to win, and Commodore UK followed its parent into liquidation at the end of August 1995.

Twenty years on and the games are still being played by many fans of the C64 on an actual C64 or via an emulator. And a few random examples suffice:

'My memories of the Commodore 64 are fond ones... The Ocean loading music was the sound of expectancy, the sound of anticipation and the sound of excitement. They just don't make gaming music like this any more. The catchy tune, the atmospheric tones, the pounding beat – it had everything necessary to excite you during the loading period'

'The key to starting any given game, pressing Shift and Run/Stop together was the opening aspect of every gaming journey

a Commodore 64 user would embark on. All in all, the Commodore 64 was a fantastic machine... and still is!'

'For me, stepping up to the Commodore 64 from my TI-99/4A was a quantum leap forward in computing. The multimedia experience alone was worth the price of admission – incredible graphics and sound that seemed light years ahead of the market. Then there were the games. From arcade knock-offs to innovative two-player experiences, you never got bored with the C64.'

'A friend's father bashed a burglar over the head with a C64. It was the only



The Commodore 128 released in 1985.

thing available that was within reach. He yanked out a few cables, sneaked up to the thief who was rummaging through some drawers and, WHAM! Down he went...'

'While I eventually transitioned to Commodore Amigas, and then – with the rest of the world – to Windows, Mac, and Linux, I'll never forget the pioneering days of Commodore when the world of personal computing and interconnectedness lay before me, intriguing, foreign, and impossibly engaging.'



# Storage Devices

To the right is Commodore's 1541 device – when it was first released there were many problems with reliability so gamers had to continue to use the default 1530 C2N Datasette (below).



Commodore's 1541 - II  
5 1/4" disk drive.





Quick Data Drive  
– not that quick in  
practice or reliable.



## Mat Allen

Over the course of its now more than thirty year lifespan, the Commodore 64 has accrued an enormous library of games. And yet, for all the thousands of titles available for the computer only a tiny percentage, some three hundred odd games, were released on cartridge.

What many people may not know is that the VIC-II (Video Interface Chip) and the SID (Sound Interface Device) chips that were responsible for the success of the Commodore 64 were first scheduled to appear in another computer known as the Commodore MAX.

The brainchild of Japanese engineer Yashi Terakura who had moved to the US after helping to complete the design of the VIC-20, it was intended to be more a dedicated games machine than a computer. Originally called the Ultimax (the name changed after suggestions it sounded like a feminine hygiene product) Tramiel gave Terakura total freedom to design what he wanted.

When the rush to actually begin what would become the C64 started at Thanksgiving 1981, it's unsurprising that Bob Yannes and Robert Russell used some aspects that had already been designed for the MAX. One of these happened to be adding the same memory configuration so they could test the cartridge port during development. Thus you can play any MAX cartridge perfectly well on a normal Commodore 64.

In an attempt to duplicate the success of the VIC-20, Tramiel chose to first release the MAX in Japan, soon after the C64 launched. It did not take off. By the time Commodore considered selling it in the West, the price of the regular C64 had dropped sufficiently to make the release of

The Commodore MAX.



the MAX unviable. Thus the machine was never sold outside of Japan and remains a highly collectable curio to this day.

In preparation for the release of both computers in Japan, Commodore obviously needed some software. Turning to HAL Labs again, the team got to work, converting some existing VIC-20 titles and creating new ones. Sadly the programmers chose to adhere to the written specifications of the graphics and sound chips of the machines rather than testing on the hardware itself, with some of the games being quite poor overall as a result.

Nonetheless, many releases such as *Clowns*, *Jupiter Lander* and *Kickman* were published for the C64 in exactly the same way they were presented for the MAX computer. Some MAX titles were not released on the C64 whilst a couple were completely rewritten, namely *Wizard of Wor* and *Gorf*, as they are utter debacles in MAX format. What is also curious and perhaps not so surprising, is that C64 versions of the games contain bug fixes and tweaks.

Of the Japanese exclusive game titles, *Road Race* and *Super Alien* are improved versions of their VIC-20 counterparts; *Mole Attack* and *Money Wars* are interesting enough for short plays at a time and *Bowling* and *Billiards* are average sports titles with questionable physics. The two standout games are *Slalom*, a clone of Taito's *Alpine Ski* arcade, and *Avenger*, a vastly superior version to the Western release where the invaders don't look like

they visit McDonalds seven times per week!

## Commodore's Own

Needless to say as the manufacturer of the 64 computer, Commodore also published a lot of its own titles on cartridge in the West. On one hand this means that none of its releases are that hard to find, on the other the quality varies from downright atrocious to stone cold classic – or in many cases completely bonkers. How else could you explain *Frog Master*? Written by Michael Crick, who would go on to program *HES Games* (aka *Go For The Gold*), you must control your tadpoles and frogs to score touchdowns in what is essentially an amphibian version of American Football. A strange concept to say the least, but amusing and involving until something better comes along – one game for which the instructions are definitely needed!

No article discussing Commodore cartridges could go by without mentioning *International Soccer*, one of the most iconic releases, and for quite a while afterwards the best football game available on the C64. The sides only have seven players each which tended to open up the pitch a bit – it was still difficult though to score against the higher computer opponents without employing one or two tricks. Andrew Spencer would later return with *International Basketball*, but this was released on tape only.

Commodore published a number of Bally Midway arcade conversions to the 64, many of which had already appeared on the





A grand collection of Commodore MAX cartridges.

VIC-20. With the better technology in the C64 they now looked and sounded closer to the originals. The deal had been borne with Bally out of Commodore attempting to sell *Star Battle* (aka *Galaxian*) and *Radar Rat Race* (aka *Rally-X*) for the VIC-20 in the West (Bally owned the arcade rights to both titles). As a compromise, Commodore formed a relationship with the company with Bally earning royalties per cartridge.

Of the brand new conversions, *Blueprint* was a decent interpretation of the ACG (aka Ultimate) programmed arcade game, and *Solar Fox* was similarly pitched. Arguably the best conversion was *Wizard of Wor* that not only was close to arcade perfect (including the speech provided by the Magic Voice add-on) with an excellent two player mode, but was more fairly balanced and playable.

One of the other notable Commodore cartridge releases was a game called *Jack Attack* where you control the titular character Jack, and have to jump on and

squash all the rotating heads in each level. Originally submitted by two young Canadian programmers unaffiliated with Commodore called Kevin Kieller and John Traynor, it arrived at the company without a name. A 'Jack Attack' was the informal name given by many Commodore employees to the rants and tirades Tramiel would launch when someone cocked up or repeatedly made mistakes.

Someone at the company decided the game should be called similar, and the rest as they say, is history.

## Engineered By Humans

Human Engineered Software (aka HES) was a short-lived American company that released a number of notable titles on cartridge. Having met co-founder Jay Balakrishnan at a UK computer show, Jeff Minter orchestrated a deal to distribute some of his titles in the US, and thus Llamasoft was unleashed across the pond. The deal, beginning with games for the VIC-20, would eventually lead to C64 *Gridrunner*, *Matrix* (renamed as *Attack of the Mutant Camels*) and *Laser Zone* to be published on cartridge, with the latter being somewhat hard to find today.

Another title published by HES was the *Wizardry* clone *Maze Master*, programmed by Michael Cranford. If the name sounds familiar, he would later go on to create *The Bard's Tale* with Brian Fargo for Interplay. Playing the game, you are very much aware just how many features the two titles have in common, such as

multiple character classes, secret doors, and the dungeon grid system. So much so, *Maze Master* could easily be called 'Bard's Tale 0'.

Due to many of the popular arcade licences being tied up with other companies, the C64 conversions that HES released were of lesser known titles. *Mr TNT* sees you attempting to defuse all of the bombs on-screen, while avoiding the fuses homing in on your position. *Rootin' Tootin'* is similar to *Pac-Man*, but you control a tuba collecting notes, which are 'fired' when moving over them and can be used to shoot the pursuing instruments. It would partially inspire Taskset to create the game *Jammin'*.

Speaking of Taskset, *The Pit* coin-op was written by Andy Walker and sees you control an alien explorer attempting to get back to its ship before a giant tank destroys it. Many of the digging and exploring mechanics influenced Chris Gray to write a similar game, and from there he and Peter Liepa created the classic *Boulder Dash*.

### Licensed Copying

Romox was a California based company that was founded in 1982 and published games on a number of formats. Having released dedicated cartridges for the TI-99/4A and VIC-20 on launch, the following year the company announced its reusable Edge Connector Programmable Cartridge (ECPC) that could



be reprogrammed each time a new title was desired.

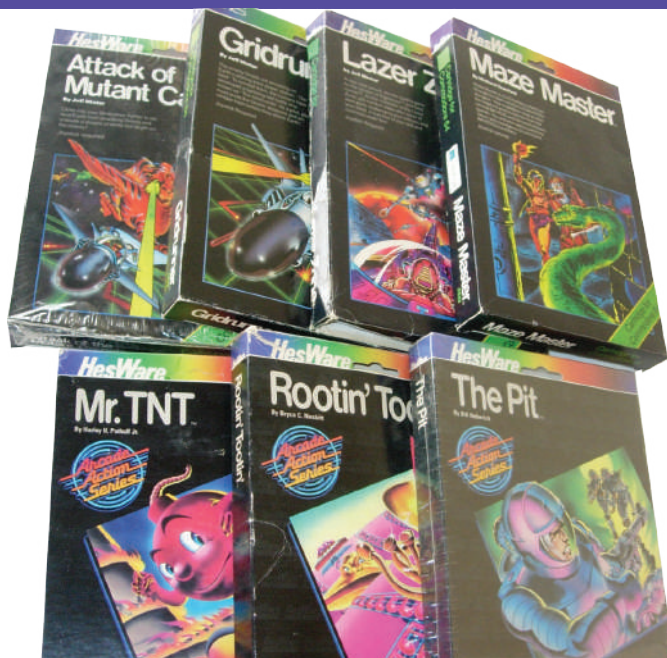
The company leased its 'Software Centres' with multiple slot duplication machines for various formats (Atari, VIC-20, C64, TI-99/4A etc), to general retail outlets. Anyone owning an ECPC could place it in the correct format cartridge slot, choose the game they wanted from the screen or Romox catalogue, pay the fee (which varied from game to game, and system to system), and then the new game

An action packed screen from *Wizard of Wor*.

The Home Entertainment collection.







A selection of cartridges by Human Engineered Software.

Romox reusable cartridges.

would be written to the cartridge.

While there were fully packaged VIC-20 titles published by Romox, complete with box and manual, there are no such examples known to exist for the C64. The evidence all points to C64 games only being available via the ECPC. There isn't a comprehensive list of titles that were available either, but it appears there were games available from various publishers including Commodore itself, Sierra, and UMI, together with Romox's own titles such as *Princess and the Frog*.

## Best Of The Rest

A lot of cartridges by many well-known publishers never made it to the UK sadly, and were almost exclusively confined to North America. US Gold did sign a contract with Sega to release some of its cartridge titles in the UK such as *Spy Hunter*, *Congo Bongo*, *Buck Rogers* and *Tapper*. Unfortunately *Congo Bongo* was not the vastly superior disk version, though *Spy Hunter* is arguably not only a great conversion, but plays better than the arcade original.

Sega also released its own home versions of *Zaxxon* and *Super Zaxxon* on cartridge for the Commodore 64, but licensed the respective magnetic media rights to Synapse and HES respectively. This was a common occurrence at the time when other cartridge based consoles were in the mix, which explains Parker Brothers releasing *Frogger* on cartridge (that would also cover the Atari consoles for example), and Sierra releasing a disk version alongside. It would be the Synapse and HES versions that were released in the UK, both by US Gold, which were on par with Sega's own efforts.

Sierra would release a number of cartridges for the C64, although the only title really known in Europe would be the first game based on the works of Brant Parker and Johnny Hart, namely *BC's Quest For Tires*. Sierra would release two further titles with the licence: *Wizard of Id's* *Wiztype* was a typing game also released on





cartridge, while *Grog's Revenge* was disk only.

There were other 'original' titles that had a definite arcade basis. *Jawbreaker* has vague *Pac-Man* influences, *Mr Cool* cannot be anything but *Q\*Bert*, *Threshold* is an *Astro Blaster* clone, and *Oil's Well* is very similar to the obscure coin-op *Anteater*. Playing a little fast and loose with the original arcade games probably let them escape any legal action.

On the other hand Parker Brothers' C64 cartridge releases were all arcade based and all licensed. After the official *Frogger* conversion, there was an inspired sequel subtitled *Threedeep* (an onomatopoeic reference) relating to the fact there were three screens to navigate your frogs across before reaching safety. *Popeye*, *Q\*Bert* and *Star Wars* (long before the Vektor Gfix version for Domark) were all decent conversions too. The best of the catalogue was easily *Gyruss*, taking the Bach infused arcade and capturing all the excitement and playability of the original.

Likewise, all of Atarisoft's C64 cartridge releases were arcade conversions with variable quality across the range as all were subcontracted to third party developers, although none of them are particularly poor. They also happened to be exactly the same titles released on the VIC-20. *Battlezone* is notable in being a pretty good game despite not using vector graphics at all. *Moon Patrol* is at the top, an excellent representation of the Irem coin-op with just enough fairness and challenge. For whatever reason, Atarisoft chose to



*Matrix* was released as *Attack of the Mutant Camels* in the US.

release *Gremlins* and *Track & Field* on disk instead.

Those wishing to educate their children were not excluded either, as Spinnaker, CBS and Fisher Price released many cartridge titles on the Commodore 64. They may not be the greatest of games, but a few of them are certainly worth investigating, such as *Adventure Creator*, *Jukebox*, and *Ducks Ahoy*. *Chalkboard* was the most extravagant, manufacturing a huge touch sensitive control pad with software that utilised overlays for it. In fact, the software will not boot up without the pad being plugged in. Unfortunately some games released by some publishers such as Mr Computer and Turbo Software...let's just say it was a good thing they stayed in the US!

## Death Of A Format

The apparent death of the cartridge format on the Commodore 64 might not be as obvious as it first seems. By the start of 1985, the average price for a tape game in the UK was £8.95 and a disk might



Some familiar names on cartridge from Sega.

set you back somewhere between £15 and £20. Cartridge prices were hovering in the upper echelons of that range in the UK. So was it the price, triggered partly by the higher manufacturing costs required compared to other media that was responsible? Probably not just that. The normal price for a disk game in the US was \$40-50 back then, and that was higher than cartridges.

The affordability of the disk drive, coupled with possibly a distrust of the cartridge medium due to the US videogame crash, meant users across the pond were now more likely to buy

*Spy Hunter*, released on cartridge, and licensed to US Gold for the UK.

disks instead. The tape medium pretty much died out in the US by mid 1984 as a result. Cartridges were limited to a maximum size of 16K as proper bankswitching had not been introduced for the boards, albeit some games such as *Toy Bizarre* got around this by decompressing on boot.

More disk drives meant more disks, and more storage capacity as the standard C64 formatted disk would hold around 170K by comparison. You can never discount a burgeoning piracy scene on top, with unprotected disks easy to copy (using the right software), and capable of holding several games on one side. While people will always complain about software piracy, it usually did wonders for hardware sales. Is it any surprise that three of the biggest selling consoles in history (PS1, PS2 and Nintendo DS) also had the highest levels of piracy?

Throw all those factors together, and the cartridge format was left behind.



## From A Land Down Under

Meanwhile, on the other side of the globe...

Activision had a slight problem. Having made the switch from Atari development to the Commodore, it had managed to avoid some of the financial issues that had ruined other publishers due to the videogame crash in the US. This was the good news. The ports made of Atari games such as *River Raid*, *Pitfall*, *Beamrider* and *Zenji* were selling well, together with original titles such as *Ghostbusters*, *LCP* and *Hacker* – enough to keep it afloat.

The problem was Activision had massively overproduced on its cartridge titles. And by overproduced, we're talking several thousand units at minimum. Unsold stock sitting in warehouses does nobody any good. Activision was able to do a deal with Home Entertainment Suppliers in Australia to take the surplus off its hands for a moderate cost. HES had already published a lot of titles in the country for the Atari 2600, so moving to a new format made logical sense.

Only the cartridges were sold, not the packaging, so HES encased them in its trademark plastic clamshells and printed slicks, sometimes re-using the same artwork from the 2600 games and merely putting a 'Commodore 64' sticker on the front. This is the reason why some Activision cartridges, especially *Designer's Pencil* and *River Raid*, are seemingly easier to find in Australia than anywhere else. With that said, in all my travels I have



Cartridges released by Parker Brothers.

never encountered HES packaging versions of *Toy Bizarre* and *Zenji*. Do they exist? Maybe one day they will surface.

Many American and European publishers had agreements with Australian distributors such as Ozisoft to locally release games, and HES was no different. This is why it is possible to find cartridge versions of such games as *Ghostbusters*, *Wonderboy*, *Kung Fu Master* and *Nova Blast* nowhere else. Albeit that they are inside the same Activision shells (with a black sticker covering the embossed logo!), using the same circuit boards with a new ROM mounted, and low quality paper labels on the front.

The nature of transferring games to cartridge format wasn't that sophisticated



either. Examining the dumps from the cartridges in a hex editor reveals that many of them were frozen and compressed using Trilogic's Expert before being burned to a 32K ROM.

Everything in general screams as low cost as possible, and yet many of the releases remain desirable because of their uniqueness. *Leaderboard* would be the last cartridge the company released with only 2,000 units in total.

### The Second Coming

Aside from the inclusion of the *Super Games 3-in-1* cartridge with certain Commodore 64 bundles in Germany in 1988, the cartridge format was in danger of becoming a distant memory outside of Australia. That was until Commodore made the surprising decision to bring out a console version of the 64 computer, called the C64GS (Games System).

Launched prior to Christmas 1990 at a price point of £99.99 in the UK, which was slightly lower than the NES and

Master System at the time, the figures and potential market made sense to Commodore. The user base in the UK was approximately 55,000 for the NES, 200K for the Master System and 1.4M for the C64, so even if the console was only a moderate success, the potential market for the resulting cartridges was far larger given they would also work with the ordinary C64 computer. Of course, figures are never the whole story.

Commodore believed that a market existed and wanted to give people a way to transition from their computer to the console thus ensuring they stayed with the company. At the same time it was aware that the market was not as big as some people thought. Commodore had big plans, thinking that the console could be the number one product for the year, off the back of major commitment from software houses and up to a hundred new cartridges within the first few months.

The benefits were certainly there. The cartridges, designed by John Twiddy and

Cartridge games  
by Epyx.



Mev Dinc in 128K, 256K or 512K flavours would provide almost instant loading with the potential to grab information while playing for a seamless experience. This would allegedly reduce the levels of piracy on the system and allow for development of cartridge only titles, together with the re-release of existing titles with better graphics, more levels and greater presentation. Finally it could allow functions such as lookup data tables to speed up complex calculations for 3D routines, which is how *Battle Command* operates.

It would naturally take time for publishers to fully utilise the potential of the cartridge format, and the average turn around time for manufacture was eight weeks. The consideration was zero piracy, but as we know, workable cracks of most cartridge titles came out relatively quickly. *Shadow of the Beast* was a bit of a pain with the constant loading interrupting the gameplay, and *Toki* lost its music, but most others worked perfectly well from disk.

Evidently the lacklustre sales impacted potential support for the console in general, but scores of potential cartridge titles fell by the wayside for reasons greater than that. The price of the cartridges was one consideration, as the target market was getting younger with less disposable income, and thus buying a cartridge was a big deal. disk drives were finally starting to become affordable for the majority of users, and with that, faster loading than tape and a huge piracy scene. The market for the C64 in general was just beginning to wane



also, the Amiga and ST had been out for 3-4 years already, and the 16-bit consoles were on the horizon in Europe.

The piles of 4-in-1 carts that would have been inside C64GS boxes ended up inside regular C64 computer packages instead, along with the *Terminator 2* cartridge. Final sales figures of the C64GS are not exactly known, but believed to be somewhere in the region of 18-20,000 out of approximately 100,000 units manufactured, not including the percentage returned as being faulty. Leftover units were raided for chips and were transplanted into regular C64C computers.

And what of the games themselves? Many were repackaged versions of existing titles, as Commodore predicted. Dinamic released five unaltered titles that were also available on tape and disk, and all of them are incredibly hard to find today. System 3 did at least jazz up its two releases with extra presentation and changed graphics. Just a pity that the other proposed titles, including *Turbo Charge*, *IK Deluxe*, and *Dawn of Steel* never came to fruition.

*Last Ninja 3* did almost make it out

*Pit Stop*, released by Epyx on cartridge.





Commodore Format magazine hailing the arrival of the GS.

The Commodore C64GS.

on cartridge, and indeed it sounds like at least one magazine reviewed the game in that format. But it wasn't to be. According to Dan Phillips, who helped work on the introduction sequence together with Robin Levy, System 3 had got as far as producing internal prototype versions of the game for testing, but declined to release the game in the format, choosing traditional tape and disk instead.

Domark chose to release three titles on cartridge, although it isn't well known that *Cyberball* debuted on the format before inevitably making it to budget tape later on, albeit in slightly cut down form. The Danish company Silverrock also released three titles, all of them now hard to find: *Skaermtrolden Hugo*, a pseudo

first person maze collect-a-thon featuring the troll comic character; *Guldskorn Expressen*, an educational train game; and *Harald Hardtand*, a platform game about keeping teeth clean licensed from Colgate Toothpaste.

By far the biggest publisher of new style cartridges was Ocean, who embraced the format as much as possible, and the majority of its releases were exclusive to the format. *Chase HQ 2*, *Pang*, and *Toki* were all better than average conversions of their arcade counterparts. *Battle Command* was an excellent Amiga/ST port and *Navy Seals* turned a mediocre film into a brilliant game.

Finally, *Shadow of the Beast* fully grasped the potential offered to deliver





arguably a more impressive game than the Amiga original, although early boards were positioned poorly in their cases so grooves had to be cut in the sides so they could be plugged into regular C64 computers.

But in the end, the cartridge format burned ever so brightly for three years before dying off for a second time.

## Enter Sandman

And that might have been it, except for the fact that this is about the time my cartridge story gathers pace.

When my father bought me a Commodore 64 back in 1984, the cartridge medium was on its way out. I don't recall many, if any, shops stocking them for sale, and even if they had, the price would likely have been outside of my budget. Having owned an Atari 2600, owned being the key word here as it was sold to part pay for my 64, cartridges were seen as potentially expensive mistakes if you bought a duffer. Tapes by comparison were a lot cheaper.

Up until the early 1990s, I only bumped into C64 cartridges when buying the odd title cheaply at computer shows (such as *Jack Attack* and *International Soccer*) and when borrowing them from a Commodore owning mate at school. He had a copy of *Wizard of Wor*, an excellent conversion that I could neither find a copy to purchase myself, nor persuade him to part with.

When the C64GS launched, there were new cartridges released, but there wasn't much point in buying the titles that were also available on tape and/or disk. Of the exclusive titles I obtained a few,



Two cartridges from System 3.

mostly Ocean releases, but they too were comparatively expensive and Ocean notably was incredibly reluctant to send out review copies of them to Oracle Teletext, whom I was freelancing writing for at the time.

A few years later, when the C64 market had died commercially, some mail order operations such as Capri Computers and Wizard still had large stocks of all manner of titles. I was able to plug quite a few holes in my collection, and obtain some more cartridges in the process. However, there was stock only from certain manufacturers – there were no games by Parker Brothers, Sierra, Activision, and Sega for example. I was able to buy most of the Activision cartridges still sealed from an American company called Centsible Software (amusing pun), but that was about all they had.

Cue eBay – I joined the website in early 1999 and my first ever purchase was a CIB *Gyruss*! Back in the days when you'd send



A selection of Ocean Software cartridges.

Mat's rather large collection of Commodore cartridges.



US dollars in cash in an envelope instead of using Paypal. Suddenly the internet allowed me to expand my collecting horizons, like a lot of other people.

However there was still no focus, no reason to concentrate specifically on this niche format. That would come the following year. An American publication called Digital Press was looking for a Commodore 64 expert in 2000 to help create a new section for cartridges in its

collectors guide. Having been roped into assisting by a friend of mine, I began a crash course in understanding the format and what games were really out there. To paraphrase a well-worn saying, 'to know the cartridge,

I had to become the cartridge'. It also helps being slightly obsessive compulsive about such projects.

Fifteen years later, look where that has got me. Writing this article!

## The Third Era

The Commodore 64 never really died in the software sense, for after the commercial companies left the arena and switched their attentions to newer machines, what remained were the home programmers. You can argue that the 8-bit scene always had them, small teams of 1-3 individuals working on games, occasionally in their bedrooms. The stereotype sticks. Only now it was also up to them to market, sell and distribute said games instead of signing away the rights to a publisher.

While systems such as the Atari 2600 and Vectrex were the first to receive what is now tagged 'homebrew' games, said releases were always going to be available on cartridge. C64 'homebrew' was inevitably released on tape and/or disk for cost reasons. Alphaworks in Australia released a couple of titles on cartridge, and Atrax in Poland released thirty or so multicarts containing existing titles in the mid 1990s, but that was about it until the mid 2000s. Enter James Monkman.

Launched shortly after, or more accurately inspired by, the resurrection of the Retro Gamer magazine by Imagine Publishing, Retro Gamer CD (aka RGCD) was a CD based magazine with features, homebrew reviews and much

more. While only lasting five issues, James' interest in the scene and a developing friendship with Jason Kelk would lead to a venture that continues to this day.

And it all started with *Kikstart C16*. With the release of DIY cartridge kits through eBay, James suggested to Jason that they produce a limited run of the latter's recent conversion of the C16 version of *Kikstart*, a much different game to the original C64 version. It proved to be far more of a success than either imagined, selling through forty copies in no time while being sold at cost price. They were both doing this for the love of the scene.

Other releases soon followed, including *Invasive Action*, *Block Frenzy* and *Not Even Human*. Until this point, all the boxes were hand made, sprayed black, and then covered in stickers. James admitted that using the paint gave him a headache every time, and thus the decision was made to swap to smaller, easier to assemble and far less health adverse packaging.

The real turning point in the 'business' would come with releasing a cartridge version of Paul Koller's port of the indie hit *Canabalt*. Available in two flavours (with different in-game music), James was unprepared for the more than one hundred orders that came in on the first day of release, considering that each game took 30-45 minutes to manufacture from scratch. It was an overwhelming hit, and brought the Commodore 64, RGCD and the cartridge medium more exposure. Julian Rignall even reviewed the game on his blog, *Zzap! 64* style. To date, *Canabalt*

has sold over three hundred copies and continues to sell.

Since then, there have been several annual C64 cartridge competitions (with quite worthy prizes for the top placed entrants), and a number of format exclusives including *Bomberland* and *Super Crate Box* that have pushed the medium back into the minds of C64 fans and collectors alike. An alliance with Psytronik Software has seen many new homebrew titles now released across tape, disk and cartridge. Indeed, to this point at the end of 2015, RGCD is now the second biggest publisher of cartridges for the computer behind Commodore itself.

So what is the outlook for the Commodore cartridge? With RGCD continuing in its plans to release

games it is appearing somewhat rosy, despite being a 'premium' format. Those of us who grew up with the format, and those newly introduced via releases such as *Canabalt*, will hopefully continue to purchase when available.

The future's bright, the future's silicon.

A collection of RGCD released titles.





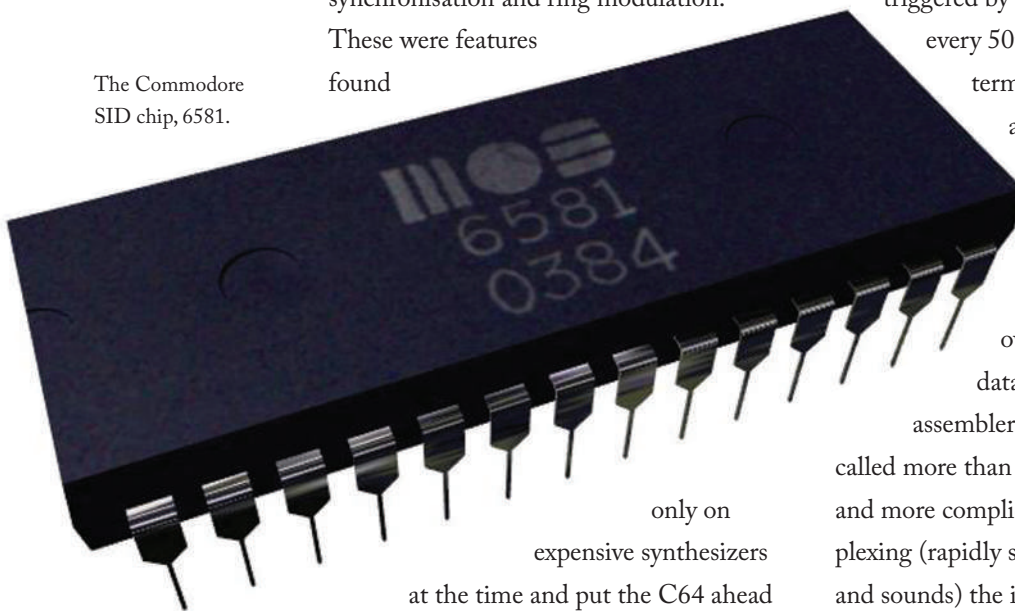


## Andrew Fisher

The Commodore 64 is well known for its musical capabilities as well as its games. Andrew Fisher chats to many of the composers that made the C64's SID produce some remarkable and fondly remembered tunes.

The Commodore 64 is rightly remembered for the music and sound effects generated by the SID chip – the Sound Interface Device. The ambitious design was down to one man, Bob Yannes, who had planned to go even further with multiple voices. The final 6581 chip design had three separate voices, each of which can had a different envelope (shape of the sound) and waveform (structure of the sound). These voices acted independently, or could be linked through synchronisation and ring modulation. These were features found

The Commodore SID chip, 6581.



only on expensive synthesizers at the time and put the C64 ahead of its competitors. The SID also included

a filter to affect the tone and resonance of the sound. However, since this is an analogue component, the quality of the filter can vary between machines (as much as 10-15% according to Commodore) and changes as the chip warms up.

The original user manual and early programming guides gave the first way to generate music – a BASIC type-in program with the music stored in DATA statements. In machine code, the equivalent was a 'player' or sound routine, triggered by the raster interrupt once every 50th of a second (in PAL terms; NTSC music plays at 60Hz). Over time more complicated editors and routines emerged, with some musicians creating their own by typing the music data into memory using an assembler. Multi-speed players were called more than once, creating deeper and more complicated sounds. By note-plexing (rapidly shifting between notes and sounds) the illusion of more than three voices was created. Games often gave a

choice of music or sound FX, until later innovations gave the chance to use one voice for SFX and the others for music simultaneously.

After Bob Yannes left, Commodore worked on a cost-reduced version of the C64. This included a new SID, the 8580 model. Based on the original schematics, an unfortunate side effect was reducing the 'noise' generated by the chip – noise that contributed to the ability to play back samples. So an 8580 chip plays back samples at a quieter volume. The C64C user manual even omits some of the registers and features.

### The Pioneers

As ambitious as the chip designer, the early musicians set the scene for more than 30 years of composers to follow. Fred Gray was at the forefront, hired to be Imagine's in-house musician as companies started to take the music seriously. Fred experimented with sounds, creating the memorable theme to *Mutants* with its ethnic/Tubular Bells feel. Working with Liverpool based Denton Designs, Fred produced the amazing suite



Gray performing at Back in Time Stockholm, 2008.

of music for the unusual *Frankie Goes to Hollywood* game based on the band of the same name including superb covers of the band's work (with collectors grabbing the rare remix of Relax on the accompanying audio tape). Fred says, "I worked in the wee small hours in a tiny bedroom. I wrote a jazz piece once called 4am – yes you guessed it, I wrote it at 4am as was the case with most of the game music. The best part were all the snazzy cars that arrived outside my door – Porsches and the like – I think the neighbours thought I was a drug baron!" With the bankruptcy of Imagine,

Fred moved to Ocean, who had an established composer. David Dunn created bouncy and jolly tunes before joining Ocean and creating that company's first dedicated C64 music routine.

*Shadowfire* soundtrack, composed by Fred Gray.





Hubbard performing live in Back In Time Lite, 2005.

At Ocean Software, a young man from Manchester went into the office to demonstrate his music for the BBC. That was Martin Galway, who was given a C64 and David's music routine to study. Martin quickly produced the loading music for *Daley Thompson's Decathlon* (a cover of Rydeen by the Yellow Music Orchestra, inspired by the arcade game Super Locomotive). "At that time I realised I had some competition. I thought I was the only one taking it seriously," says Martin. As time went on Martin became more experimental, writing his own music routines. The epic *Parallax* title tune, the randomly generated solos of *Times of Lore* and the buzzing bees of *Insects in Space* (written while Martin was briefly

Rob Hubbard's *Commando* tune was created overnight at Elite's offices.

part of Sensible Software) show his range and desire to try something different. Ocean's *Rambo* became Martin's calling card, a deft combination of the original film score and SID sounds. Martin headed west to America and remains in the games industry.

Further north there was a gigging musician making a living. But when the educational software company he wrote a game for went out of business, Rob Hubbard decided to concentrate on what he was good at – composing music. "Originally I viewed game music as simply dire – wrong notes all over the place and simply bad musically. That's why I started: I thought I could at least get the notes right! I didn't think of it as pioneering. We simply got on with it and had a lot of fun doing it. Yes it was also additional income to help pay the bills," says Rob. His work quickly gained admiration, notably the theme from Gremlin's *Thing on a Spring*. With accurate cover versions of Synergy (*Master of Magic*'s beautiful and mysterious tune) and Cabaret Voltaire (in sample-laden *I, Ball*), Rob also had some low points. This included





the music for *Geoff Capes' Strongman Challenge* (with persistent rumours he was drunk at the time) and a cover of 'The Stripper' for *Sam Fox's Strip Poker* (under the pseudonym John North). "I was living very cheap and making a decent living for a gigging musician, but it was never going to be enough to make real long term plans. I had been doing lots of gigs and the change was very welcome indeed – and also extremely stimulating. We all worked 16 hour days 7 days a week. After all, it was hard to turn down any work." Perhaps Rob's most famous work was for the conversion of arcade smash *Commando*, which brings up an interesting anecdote. "I went down to Elite's offices and started working on it late at night, and worked on it through the night. I took one listen to the original arcade version and started working on the C64 version. I think they wanted some resemblance to the arcade version, but I just did what I wanted to do. By the time everyone arrived at 8.00am in the morning, I had loaded the main tune on every C64 in the building! I got my cheque and was on a train home by 10.00



am..." Rob eventually moved to Electronic Arts in the States.

Daglish on the flute at Back in Time Lite, 2005.

***"By the time everyone arrived at 8.00am in the morning, I had loaded the main tune on every C64 in the building!"***

Back in Manchester another young programmer made the decision to

concentrate on music. David Whittaker had been part of Binary Design, working on games including *Lazy Jones*.

That game featured multiple sub-games each with its own piece

Type DEMO into the high-score table of *Trap* to reveal the hidden 'gladiator' demo with Ben Daglish's epic music.





Ben Daglish on guitar at Retrovision, 2005.

of music created by David. Years later, the band Kernkraft 4000 would ‘borrow’ one sub-tune for the dance hit *Zombie Nation*, leading to a court case. David worked quickly and efficiently, creating short and memorable tunes for many budget games (*Panther*, *Red Max*) and worked with former colleagues (*Glider Rider*). “I know that I’ve done tunes in just a few minutes (as they were so short, in those days). I did have a few dry spells, where I couldn’t come up with anything - so I would usually borrow ideas from others (i.e. plagiarise) and even from myself. One example was *Red Max*, which is my rip-off of Rob’s *Commando* - but more of an homage really,” admits David. His most recent work includes the highly

successful LEGO games for UK developer Traveller’s Tales.

Palace Software was a spin-off from the highly successful Palace Video, and created some memorable games. Their in-house musician was Richard Joseph, who had been part of the prog rock scene of the 1970s (in the band CMU – Contemporary Music Unit). Then he worked on games with a darker edge, the Halloween-inspired *Cauldron* and the Conan-inspired *Barbarian*. As well as the incredible main tune, *Barbarian* featured impressive sword-swinging sounds and the memorable flying neck chop that decapitated an opponent. Richard told *Edge* magazine, “For the first few years it just got better and better. It got to a point where I was earning money that made my successful music biz friends green with envy. Then somewhere in the middle nineties people started arriving in the games industry straight from college and the fees plummeted. It’s been a slow journey back....” Sadly Richard passed away in 2007, with the demo scene creating a tribute demo filled with memories of the man.



Galway at Back in Time Brighton, 2003.

Right, Martin composed the *Arkanoïd* main theme.



In Sheffield programmer Tony Crowther linked up with school friend Ben Daghish to form We M.U.S.I.C. (standing for We Make Use of Sound In Computers). Tony's technical expertise coupled with Ben's flair as a composer created memorable tunes for both Alligata and Gremlin Graphics based in Sheffield (with a short stint at Quicksilver). Ben's epic tune for shoot 'em up *Trap* perfectly fitted the hidden in-game demo (released separately as *The Gladiator*), and was also recorded in stereo from two synchronised C64's for the game's accompanying audio tape. "Certainly there were a couple of tunes that I did overnight. As to the longest...that probably was *Trap* - it was ages before I was happy with it - a couple of weeks, at least," remembers Ben. Ben also fondly recalls working on *Auf Wiedersehen Monty* alongside Rob Hubbard for Gremlin. In the end it was the 'suits' taking over the business that led Ben to return to performing.

### Sampling and Talking

The 1980s saw a rise in the techniques



Jeroen Tel performed a DJ set at Back in Time Live 2007.

of sampling, turning sound into data that can be played back. Typically only a few seconds could be played back due to the C64's limited memory, but there are clever mixes of complete tunes and impressive sound effects generated through sampling. Martin Galway's *Arkanoid* was the first commercial release to feature sampled sounds alongside the music, although Chris Huelsbeck was already experimenting along similar lines.

Synthesized speech was important in games, with *Impossible Mission* being



fondly remembered.

The bad guy Elvin Atombender greets a new player by saying "Another visitor... Stay awhile. Stay forever!" created by software synthesis. *Ghostbusters* by David Crane

*Cybernoid 2* title track, composed by Jeroen Tel.





Visa Roster's stage show includes props and dance routines (here to *Way Of The Exploding Fist* in Copenhagen, 2005).

included speech ("He slimed me!") and a great sing-along version of the theme tune that displayed the lyrics on screen. *Beach Head II* featured several memorable samples as soldiers died ("Medic! I'm hit!") and the evil Dictator ("You can't hurt me") was defeated.

Hardware could also create speech. Commodore's Magic Voice was a plug-in cartridge, adding speech to games including *Wizard of Wor* (which had featured speech in the arcade). However, some called it the "Tragic Voice" for its monotone delivery.

The Currah  $\mu$ Speech cartridge used the SID chip's external input (through the A/V port) to output its speech, created by breaking down words into phonemes.

Rob Hubbard & Mark Knight performed with PRESS PLAY ON TAPE at the Copenhagen Retro Concert, 2005.



## Conquering Europe

As groups of young men across the Continent pushed the boundaries of what the machine could do, the Commodore 64 demo scene grew and needed more and more music.

Its roots in the hacking scene led them to adopt handles. Step forward many great names, including PCVF (an expert in the art of sampling) and DRAX (another prolific musician). Perhaps the best-known were Dutch group the Maniacs of Noise, moving seamlessly from the demo scene into commercial games. Jeroen Tel and Charles Deenen were the founder members, providing great soundtracks including *Golden Axe*, *Turbo Out Run* (filled with great samples) and *Robocop 3* (also used in classic demo Dutch Breeze).

The demo scene continues today, with regular competitions and scene parties. Here new work is played on big screens, with the partygoers voting for their favourite demo, graphics and music.

## Emulation Nation

The first emulation of SID tunes came in an Amiga demo, collecting together top SID tunes. This led directly to SIDPlay, a utility for many different machines that plays back the original data accurately.

As curators of C64 music, the High Voltage SID Collection now contains over 45,000 music files and is regularly updated. From America, there is the Compute! Gazette SIDPlayer collection, over 15,000 tunes created in .MUS format. On the C64 this SIDPlayer format had the ability to show a picture, display the lyrics in time with the music and even create 6-voice stereo (with the addition of a second SID chip).

It's not just software emulation either. The BBC Micro, Commodore Plus/4 and the SAM Coupe have all had hardware add-ons to interface with a SID chip. The HardSID board added a SID chip to PCs, while the SIDStation was used to generate SID-style sounds.

The SID Symphony cartridge was the easy way to have six-voice capability, a feature replicated by the impressive 1541 Ultimate (that can also create the sound of a disk drive as it loads from memory card). The MSSIAH cartridge adds MIDI capability alongside the SID sound generation.



Mark 'madfiddler' Knight and Ben Daglish playing at Brighton 2015 in the band SID80s.

## Remix to the Rescue

Commodore may have become bankrupt in 1994, but the music lived on. The remix scene took the old favourites, used new hardware and live instruments, and released through [www.remix64.com](http://www.remix64.com) and [remix.kwed.org](http://remix.kwed.org). There are even bands dedicated to playing the music live. PRESS PLAY ON TAPE have expanded to cover other machines, but are perhaps best known for their great stage shows and 'boy band' video. Stuck In D'80s is a SID supergroup, featuring a group of famous musicians and programmers. The heart of the band has always been Ben Daglish and Mark Knight (the "Mad Fiddler"), with Jon Hare (Sensible Software), Jeremy Longley (Bullfrog), Matthew Cannon, Marcel Donné and Reyn Ouwehand all playing alongside them. Rob Hubbard has also appeared live, playing piano arrangements of his hits. 8-bit Weapon and ComputeHer use vintage hardware (including a C64,

Atari 2600 and GameBoy) to create their chiptune music, part of a much wider scene.

Chris Abbott and C64Audio.com took things to a new level with the Back in Time CDs – and the series of live events it inspired. From a nightclub in Birmingham to Sweden, each event has had its own unique flavour and new discoveries.

Among them was Visa Röster, a group of vocal musicians singing a capella and with backing tracks to create something unique. This group was founded by Pex Tufvesson, known in the demo scene as Mahoney with a series of technically impressive musical demos of his own.

Recent Kickstarter projects have led to the creation of remix CDs from the likes of Jeroen Tel and Matt Gray (who is also creating new SID tunes for his

Reformation album). Chris Abbott's ambitious plan is for a set of symphonic arrangements of C64 music, leading to a live concert and specially created orchestral sheet music for the dedicated collector.

The SID fans want to hear more, and they will not be disappointed.

*Interview quotes from "Computer Game Music –The Rock 'n Roll Years" by Chris Abbott, published in Edge magazine and used with permission. All photos, bar the 80s image, owned by Andrew Fisher.*

A reunion of composers at Back in Time Brighton. Back row (left to right): Barry Leitch, Rob Hubbard, Reyn Ouwehand, Marcel Donné, Jason Page. Front row (left to right): Martin Galway, Ben Daglish, Markus Klein, Matthew Cannon, Fred Gray.





Original Cybernoid  
art by Wil Overton.



THE FIGHTING MACHINE

**CYBERNOID**



## Martyn Carroll

Loading time didn't have to mean wasted time. Martyn Carroll looks back at the C64 loaders that appeased and entertained gamers while they waited for titles to spool from tape.

I was a Spectrum child, brought up on Bug-Byte and Ultimate Play the Game, but my closest friend had a C64 so I was lucky enough to play games on both computers. I remember going to his house, aged around nine or ten, and him loading up his cassette copy of Ocean's *Rambo: First Blood Part II*. He notched up the volume on his tiny Ferguson TV and smiled and I soon knew why. The sound kicked in and to a Speccy boy it sounded almost otherworldly. Morse code was emitted as the Rambo image began to fill the screen, and I've since learnt that the sounds spell out the names of those involved in the game's creation, the first being Bill Barna.

Bill was responsible for coding the loader while Martin Galway utilised his masterly SID skills to compose the music. I'd argue that the actual image of Rambo wasn't quite as striking as the Spectrum version, but once you added in the visual 'reveal' and of course Martin's suitably filmic theme then there was no competition. To say I was excited to play the actual game would be an understatement.

I'd later play through my friend's extensive games collection and discover different loaders.

The most common was Novaload, which was easy to identify as it advertised itself on start-up. Novaload grabbed your

attention with a distinctive, Speccy-like screech before displaying text, or showing an image, or playing a tune, or sometimes all three. Crucially, Novaload displayed a block counter so you had an idea of how long

The hugely memorable *Rambo* loader featured an incredible Martin Galway theme. It wasn't based on Jerry Goldsmith's film score but it was on a par.





the game would take to load. *Commando*, Elite's big *Rambo* rival, used Novaload and featured a celebrated loading theme based on chart hit Living on Video by Trans-X.

Novaload was developed by Paul Woakes of Novagen Software and was first used on Novagen's C64 version of *Encounter*. Novagen would go on to licence its loader to many other developers, including Ocean and US Gold (the 'Stars and Stripes' loader that preceded the likes of *Spy Hunter* and *Raid Over Moscow* was crude but certainly memorable).

Some of the older games displayed nothing but a blank blue screen and took forever to load, with the tape counter creeping past 200 or even 250. We'd wait more than 15 minutes to play *The Hobbit*, and we could have grown Kevin Toms-style beards in the time it took to load the original *Football Manager*. It was clear that these loaders were designed to improve performance as well as presentation.

The 1541 disk drive was available of course, but in the UK at least most owners persevered with their trusty Datasets. I didn't know a single C64 owner with a disk



drive and can't remember seeing many disk releases for sale in shops. If tape loading routines hadn't improved then maybe disks would have been the answer.

Hewson's *Paratroid* (Competition Edition) loader featured sinister robots emerging from the shadows.

*We could have grown  
Kevin Toms-style beards  
in the time it took to load  
Football Manager.*

Lengthy loading times are the key reason why programmer Paul Hughes decided to develop his own custom tape loader. "It's all Jeff Minter's fault!" he tells me, laughing. "Strictly speaking it

was the German company Kingsoft that provided the turbo loader for *Revenge of the Mutant Camels*. I booted it up and the game started after a few minutes rather than half an hour. What was this voodoo? I

Many long-time C64 owners will remember this early loader which serenaded us with the Star-Spangled banner.







The image was basic but Mark Cooksey's *Commando* loading music was a hit.

did a bit of research and found out how 'challenged' the C64's IO routines were. I figured by changing the tape data format to something more sensible and ramping the baud rate up I could do the IO under interrupt, leaving time to do other things."

Paul was friendly with the guys at Graftgold and his new loader – which he dubbed 'Freeload' – was used on *Uridium*, *Paradroid* (Competition Edition) and others. So how exactly was Freeload able to speed up loading as well as bring the bells and whistles? "The Datasette was a digital device so the hardware could generate a signal on the C64 every time a pulse transitioned from high to low on the tape," he says, speaking broadly. "Freeload would monitor the signal and using hardware timers would determine how long the pulse

lasted thus determining if the pulse should be interpreted as a one or a zero. Because this was done under interrupt using timers, any time when the loader wasn't calculating how long the pulses were the CPU was 'free' to do other things such as updating a music driver, or waiting for the raster position to hit a certain point in order to use the hardware scroll."

Freeload operated at a speed of around 3,000 baud – it was possible to go faster but Paul tells me that if you went too fast it caused reliability problems when the tapes were duplicated. Still, the standard C64 loader ran at just 300 baud so it was a massive speed improvement. Paul later went to work in-house at Ocean where he assumed responsibility for mastering releases following Bill Barna's departure. His Freeload routine was used on every Ocean title from *Wizball* in 1987 until the firm quit the C64 market in the early 90s.

Who could forget those famous Ocean loaders featuring iconic music from Martin Galway, Pete Clarke and others?

As fantastic as they were, the Ocean

*The Last Ninja* loader was like a movie opening, with the game's credits displayed before the title screen.





loading themes were almost like stock music as they were used across multiple releases. Some other titles tailored the loading music to the games they preceded – Rob Hubbard’s spacey Jarre-inspired *Sanxion* theme was a perfect scene-setter, as was Ben Daglish and Anthony Lees’ oriental loading music for *The Last Ninja* (what better way to alleviate the necessary evil of a multi-load?).

Matt Gray’s compositions for *Last Ninja 2*, *Tusker* and *Deliverance: Stormlord 2* were all equally amazing, managing to build anticipation and atmosphere as you waited to play.

All of these titles used the popular Cyberload loader. As for Freeload, Paul continued to develop it, usually in a bid to thwart hackers and cheat devices. “For the most part the actual core of what became Freeload remained pretty constant, so I

spent more time working around loader exploits and finding ways of stopping ‘freeze’ cartridges from working properly.

*Wizball* marked Freeload’s first appearance on an Ocean title.

*His Freeload routine was used on every Ocean title from Wizball in 1987 until the firm quit.*

Every so often I’d try something different with the free part of Freeload, be it sprite animations during loading or even mini games.”

That’s right – Paul developed a version of Freeload where you could play *Space Invaders*, *Breakout* and other coin-op classics as the main game loaded, but it was shelved as it didn’t sit well with Ocean’s penchant for licensing arcade properties.

Such concerns didn’t bother



Invade -A -Load - a game within a game!

A recent picture of Paul Hughes and Matthew Cannon.



Mastertronic who featured Richard Aplin's *Invade-A-Load Space Invaders* clone on many of its releases from 1988 onwards. Budget rivals Players featured a simple maze game entitled *Painter* on several of its releases. But perhaps the most innovative interactive loader was the music remix tool that appeared on *Delta* and other Thalamus

titles. Dubbed Mix-E-Load, it allowed users to tweak Rob Hubbard's tune as the game loaded.

Many of you will have your own favourite loaders. Paul and I happen to share the same one: *Rambo*. "It's the music," says Paul. "It was specially written for *Rambo* by Martin and it was just a brilliant composition with

superlative audio programming.

It would be remiss of me not to say that the best-loved part of the loaders wasn't the fact that it was fast, reliable, or you could do stuff during the loads, it was all about the music. Martin Galway, Jon Dunn, Matt Cannon and Pete Clarke – they were the real stars."

***Martin Galway, Jon Dunn, Matt Cannon and Pete Clarke – they were the real stars.***

These loaders only occupied the C64's memory for the briefest of times while games loaded, but they were often so inventive and enjoyable that they've stuck in our memories for far longer.



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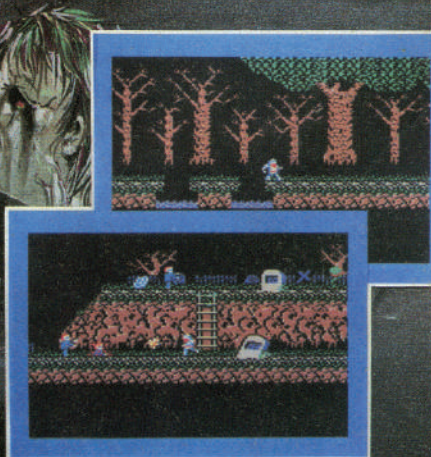
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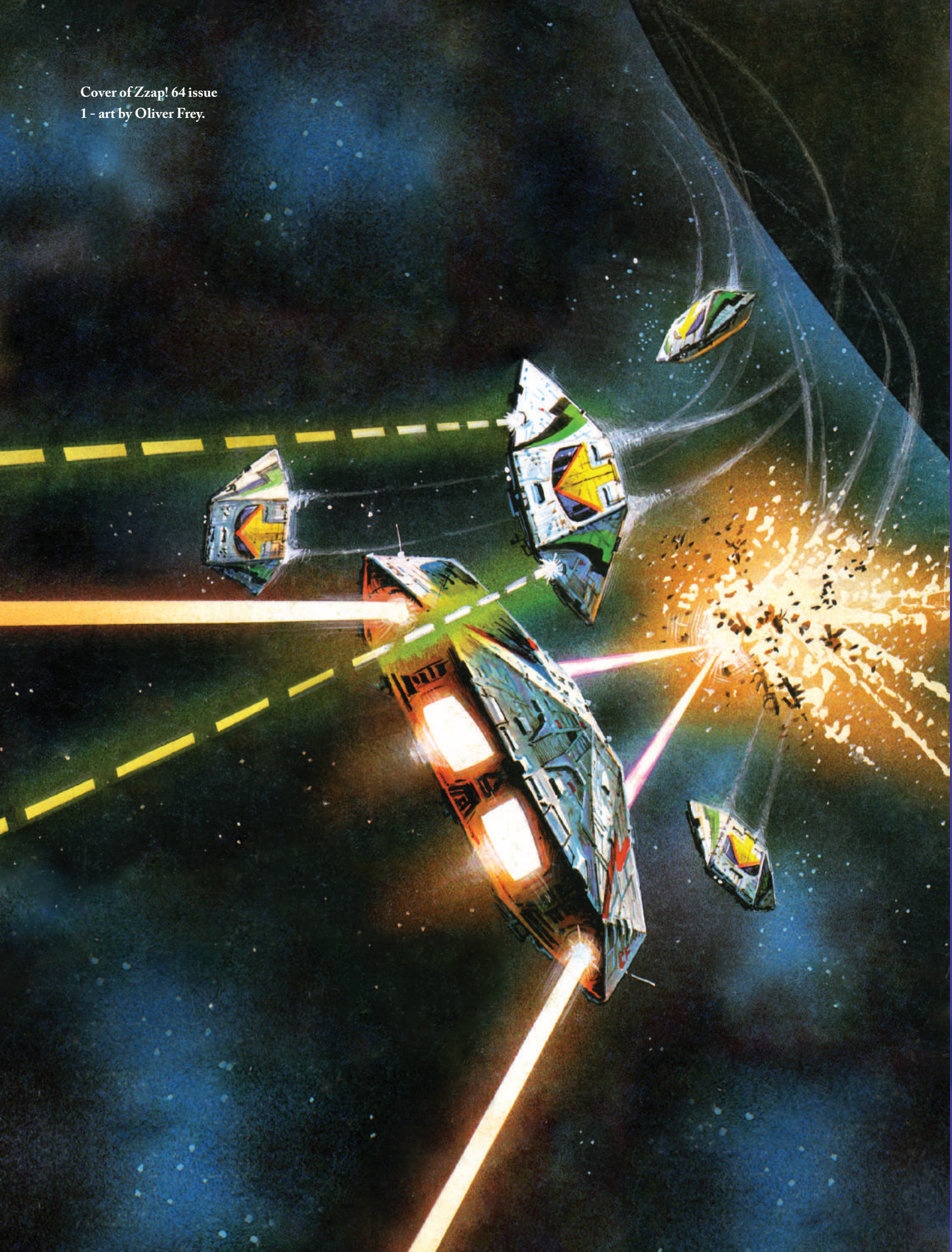


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elite



Cover of Zzap! 64 issue  
1 - art by Oliver Frey.





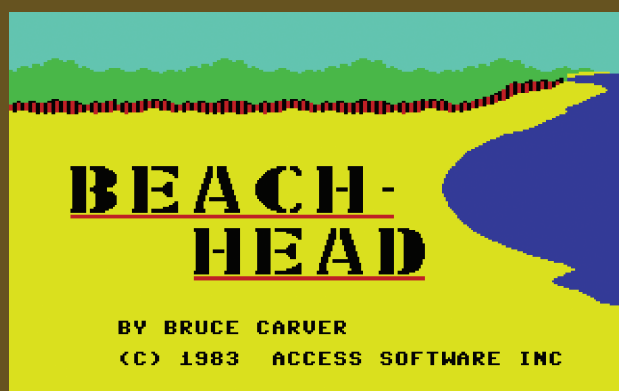
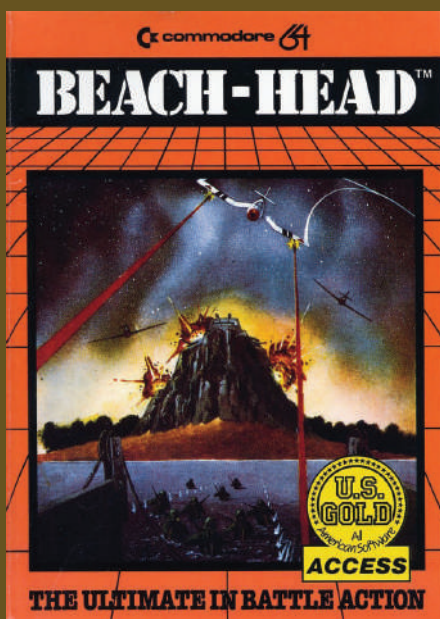


**THE GAMES**





Name : Beach-Head  
 Year : 1983  
 Publisher : US Gold  
 Author : Bruce Carver

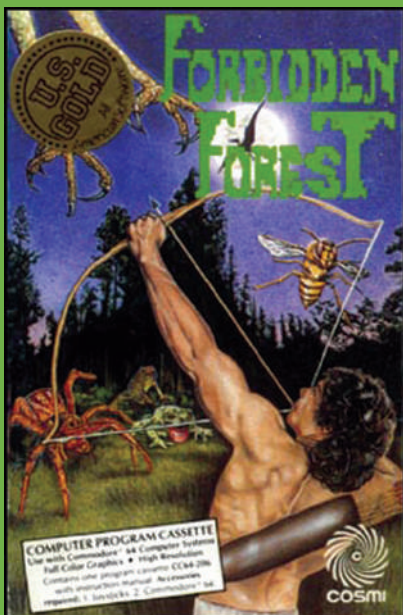


When it comes to sheer versatility, *Beach-Head* remains one of the finest non-RTS war games that has appeared on the C64. Leaning more towards arcade action, though not completely without strategic elements, the game sees you command a number of ships through torpedo defences before starting you off on bombing runs and subsequently being assaulted by tanks. Visually the game is nothing to write home about, the graphics being quite simple in their presentation. This does not affect the gameplay though with each stage being amazingly fun to play. On the beach landing you even get the opportunity to put on the hat of a military commander and make strategic decisions – well simply put if you choose to sneak your ships through the hidden torpedo-laden bay the number of enemies you have to fight later on is influenced. The game proved to be a huge success for US Gold and was an early example of the quality of C64 games being brought over the Atlantic for gamers to play in Europe.





Name : Forbidden Forest  
 Year : 1983  
 Publisher : US Gold  
 Author : Paul Norman



SCORE  
00001000

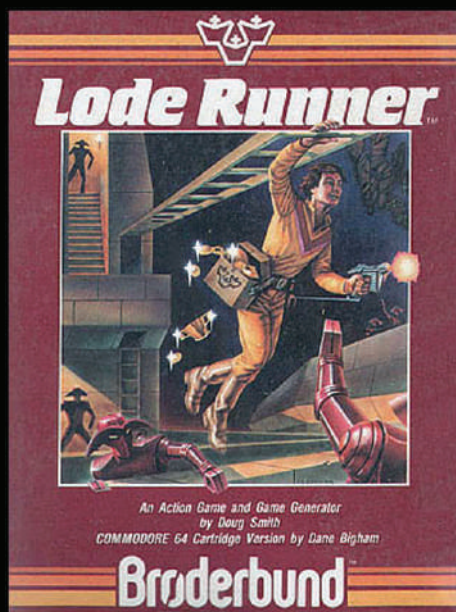


When the moon bled red and the shadows crept across the land, Cosmi (the development company behind *Forbidden Forest*) knew how to spread terror into the hearts of men and gamers. The gameplay in many of their games could feel a little bit cumbersome and uncooperative – *Forbidden Forest* proves to be a fine example of this, leaving little room for gaming error. The game though is a frighteningly atmospheric experience mainly through the use of simplistic well-designed background art and a dark, ominous soundtrack. You play as an archer, sent into the forest to battle the denizens there armed with just your bow and arrow. Rather than being a hectic shooter, the game demands you set up your shots carefully – if you cannot, you will have to run if you want to survive. The game features a nice variety of enemies and an intimidating last boss to round out your night of tribulation, writing itself into the hall of horror fame for quite some time still to come.



# Brøderbund SOFTWARE

Name : Lode Runner  
Year : 1983  
Publisher : Brøderbund  
Author : Doug Smith, Dane Bigham



Brøderbund  
Software  
Presents  
**Lode Runner**  
By  
DOUG SMITH AND DANE BIGHAM  
(C) Copyright 1983



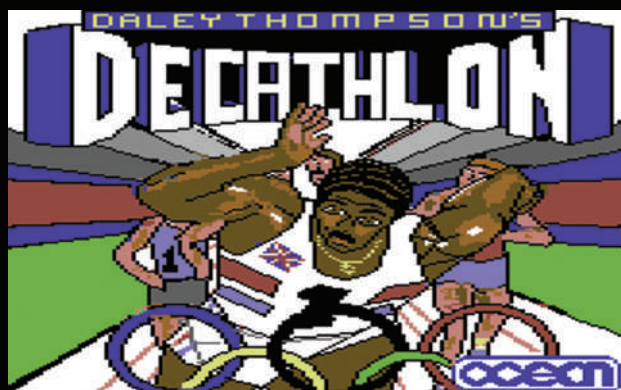
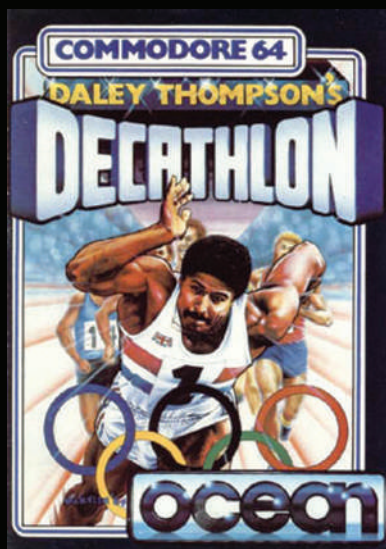
**L**ode Runner is not a graphically impressive game – it's not a friend of first impressions, that much is true. Yet, behind this outer layer of simplistic bricks, ladders and stick figures hides a game of frantic and unexpected depth – especially if you got the disk version, which offered a grand total of 150 stages of non-stop running and floor hole-blasting. Your white stick figure is chased around each stage by a group of murderous blue stick figures intent on taking your life. They will also try to steal the packages you are tasked with picking up and if successful, force you to lure them into a crushing death by regenerating brick floors. But even better, in the face of all this abundance, *Lode Runner* also comes with a stage editor, allowing anyone to share their brainbenders with the world at large. The only improvement that could be made to this most perfect game is on the visual side – flash graphics though do not, as we know, make a good game.





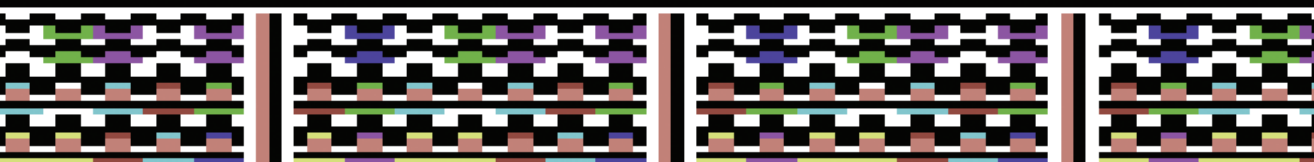


Name : Daley Thompson's Decathlon  
 Year : 1984  
 Publisher : Ocean  
 Author : David Collier, Martin Galway,  
 David Dunn

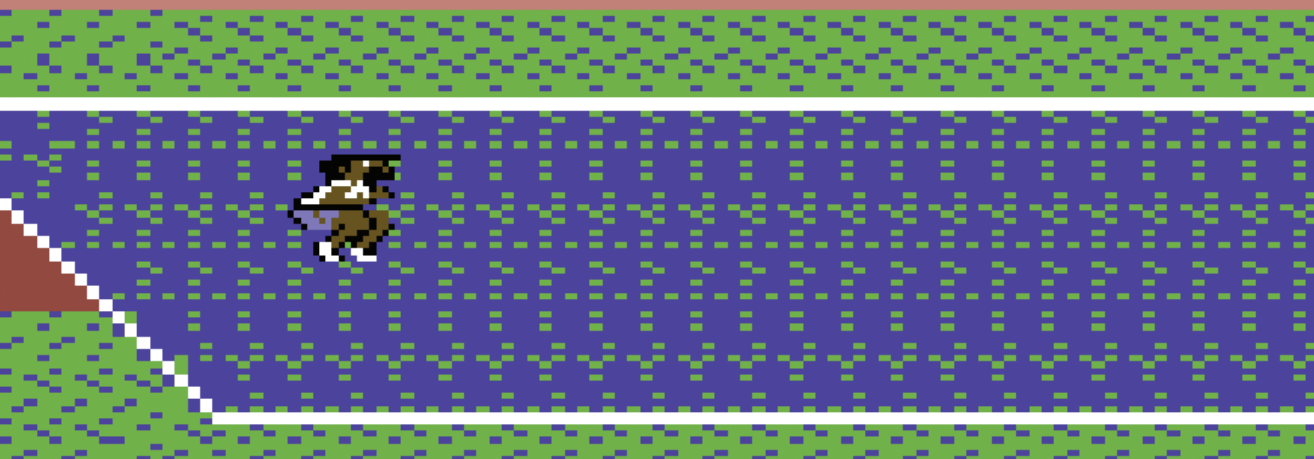


Daley Thompson, as well as being an Olympic champion, was crowned by gamers as the patron saint of joysticks. His Decathlon games saw the destruction of many a Quickshot as gamers waggled their 'stick' to make his on-screen persona run faster. *Daley Thompson's Decathlon* was based on the arcade game *Track & Field* and covers ten sporting events in total where a combination of running, jumping and throwing is required to move closer to winning the gold medal – each event has a qualifying target to reach be it a time or a distance. If successful (the high jump event is very tricky!), Daley finds himself on the podium, waving to the crowd as Chariots of Fire blasts out of the SID chip. After the somewhat short-lived celebration, it's back onto the track you go, joystick in hand and faster qualifying times and distances to beat. The C64's representation of Daley on screen was much improved over the ghostly athlete in the ZX Spectrum version of the game!

DISTANCE	00 = 00	METERS
WORLD RECD	11 = 87	METERS
IG LENGTH	06 = 80	METERS
BEST	00 = 00	METERS



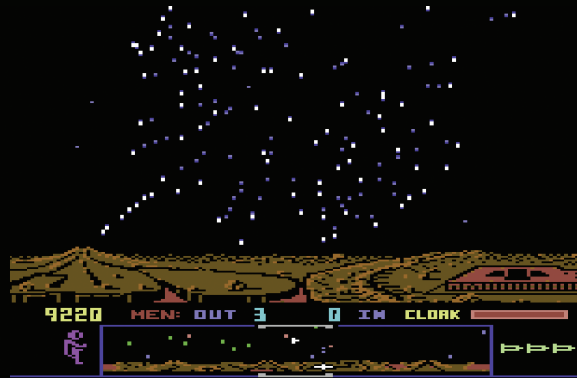
5 WHSMITH BARCLAYS -



SCORE	000000	M/SEC	09 = 35
			LIVES 3



Name : Dropzone  
 Year : 1984  
 Publisher : US Gold  
 Author : Archer Maclean



# DROPZONE

WRITTEN BY ARCHER MACLEAN

(C) 1984 U.S. GOLD PRODUCED BY ARENA GRAPHICS

## DROPZONE ADVERSARIES

MAN	NEMESITE	SPORE
★ ?	★ 250	★ 750
PLANTER	BLUNDER STORM	TRAILER
★ 150	★ 250	★ 250
ANDROID	NMEYE	ANTI MATTER
★ ?	★ 100	★ 150



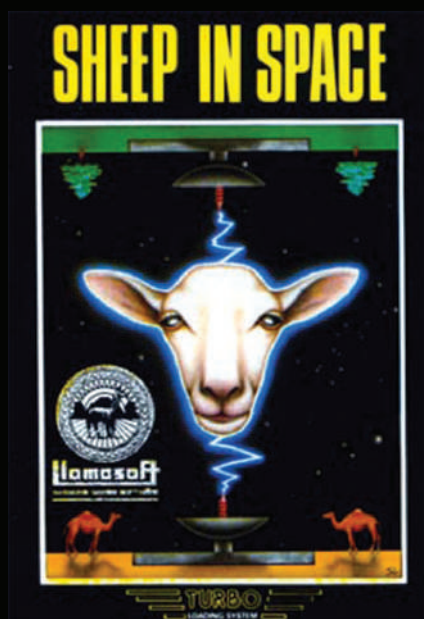


It's well known that Archer Maclean started writing games for the Atari first then created conversions of them himself for the C64. Drawing inspiration from his love for arcade games – including the classic *Defender* by Eugene Jarvis – Archer put together an immaculate tribute in the form of *Dropzone*. The hero flies around the scrolling landscape using a jetpack and must protect the scientists by returning them to base without fail. A myriad of foes will try to swoop down and grab the guys in white coats, lifting them in the air then sending them to their death. If caught, the player first has to shoot the enemy and then catch the falling professors before they hit the ground, earning a big bonus for the number left alive at each level's end. Storm clouds, pods that burst into multiple enemies and vicious flying saucers are all present to add to the player's challenge. From large pixel explosions to the attract sequence, *Dropzone* is a quality game and one that will have you coming back to improve your score.



# Llamasoft

Name : Sheep in Space  
 Year : 1984  
 Publisher : Llamasoft  
 Author : Jeff Minter, James Lisney



SCORE 1. 0000000 SCORE 2. 0000000  
 < SHIPS 00 \*\*\*\*\*PROXIM\*\*\*\*\* CHARGE 0 >  
 LLAMASOFT PRESENTS JEFF MINTER'S  
 S H E E P I N S P A C E  
 DESIGN AND PROGRAMMING BY JEFF  
 MUSIC ARRANGED BY J. LISNEY  
 < SHIPS 00 \*\*\*\*\*PROXIM\*\*\*\*\* CHARGE 0 >  
 SHIELDS 6... SHEEP 4... STOMACH FULL

SCORE 1. 0000000 SCORE 2. 0000000  
 SHIPS 16 <<<<<PROXIM CHARGE 0



SHIPS 16 <<<<<PROXIM CHARGE 0  
 SHIELDS 6... SHEEP 4... STOMACH BLOATED

SCORE 1. 0000000  
 < SHIPS 10 <<<<<  
 SHIELDS 6... SHEEP 4... STOMACH BLOATED



SHIPS 10 <<<<<  
 SHIELDS 5... SHEEP 4... STOMACH FULL

Mr Minter set up Llamasoft with help from his family, and gained a loyal following thanks to his series of unusual shoot 'em ups. From *Attack of the Mutant Camels* (his first C64 effort) to *Ancipital* (with four-way gravity) and the clever *Batalyx* (a series of mini-games), Jeff tried to do something different and featured animals as the stars. *Sheep in Space* is about a robotic sheep protecting the shield generators on a series of planets. Inspired by the arcade game *Stargate*, the planet has two surfaces – one at the top of the screen and one at the bottom, with gravity affecting the path of the sheep's bullets. Stopping the raiders damaging the shield is the priority but a variety of strange enemies stand in the way. To replenish the sheep's energy it must land and eat the nutritious grass, but eating too much causes the animal to explode! With Jeff's hallmark of cute graphics, unique animal ingenuity and tough gameplay, this one stood out from the flock.







Name : Raid Over Moscow  
 Year : 1984  
 Publisher : US Gold  
 Author : Bruce Carver

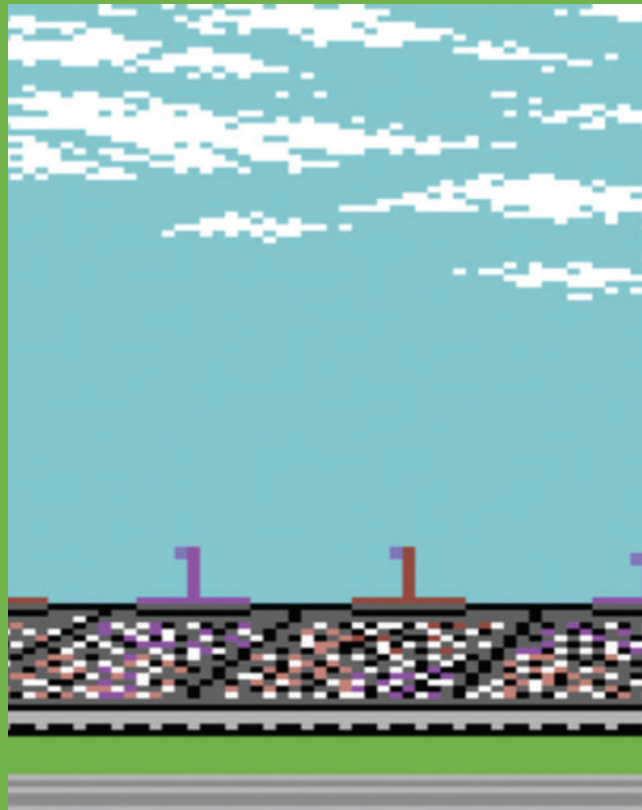
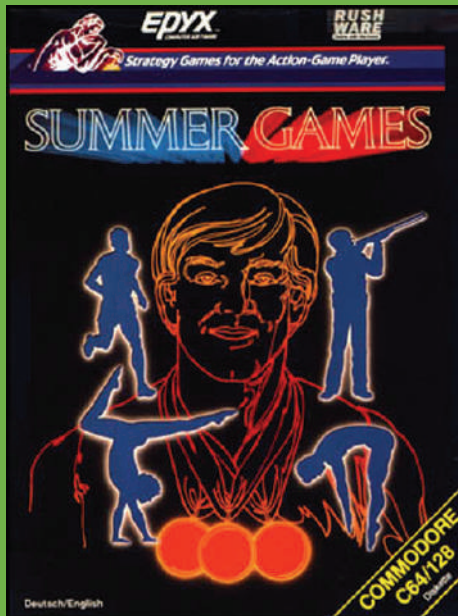
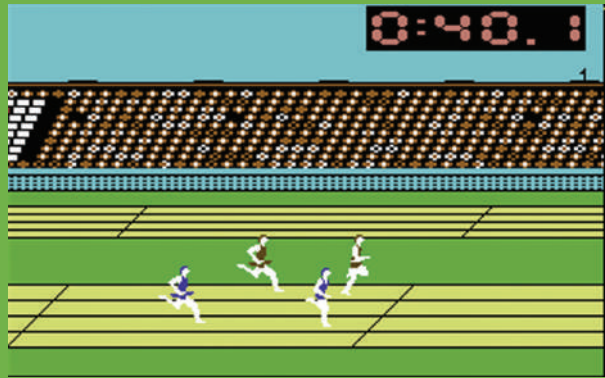


Released at the height of the Cold War, *Raid* was controversial – even leading to questions being asked about the game in the Finnish parliament. We find world peace once again at risk and therefore somehow justifying an attack on three Soviet missile bases using a war plane launched from an orbital hangar somewhere in the West. The first challenge the game chucks at the player is the manoeuvring of the aircraft out of the hangar, pressing F7 to open the doors at the right moment (who would have guessed?) to allow the plane to leave the shelter and hit the skies. On the way to the first base, the player must shoot an assortment of enemies and ground targets while avoiding collisions and enemy shots. Numerous defence towers must then be destroyed and with all three bases flattened it's then off for a quick visit to the Kremlin, the diffusion of a nuclear reactor and then a quick rush back home for Sunday tea. With three difficulty levels to conquer, this is a blast from the past worth trying.



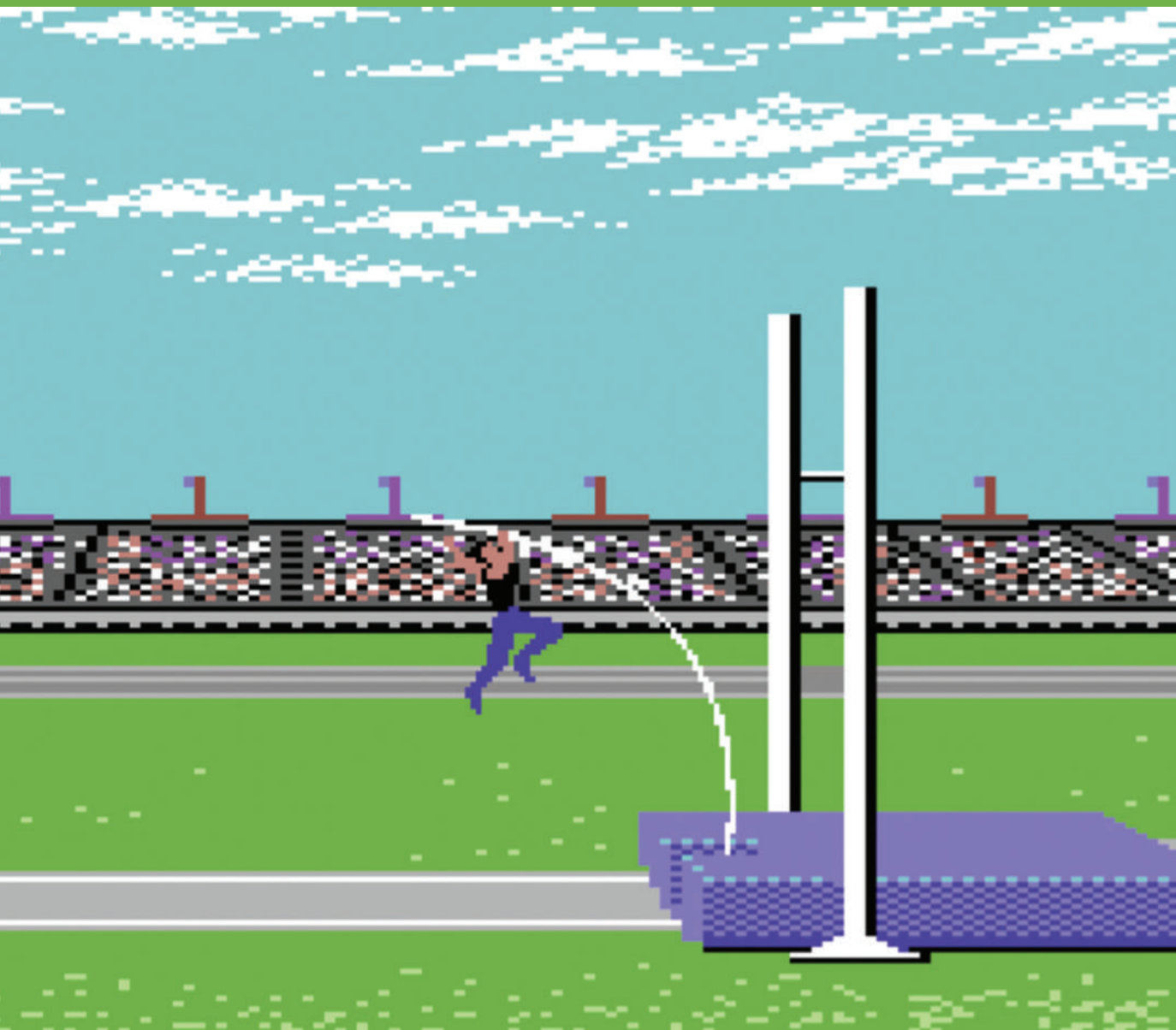


Name : Summer Games  
 Year : 1984  
 Publisher : US Gold  
 Author : Scott Nelson, Erin Murphy,  
 Stephen Mudry, Brian McGhie,  
 Stephen H. Landrum,  
 Jon Leupp, Randy Glover



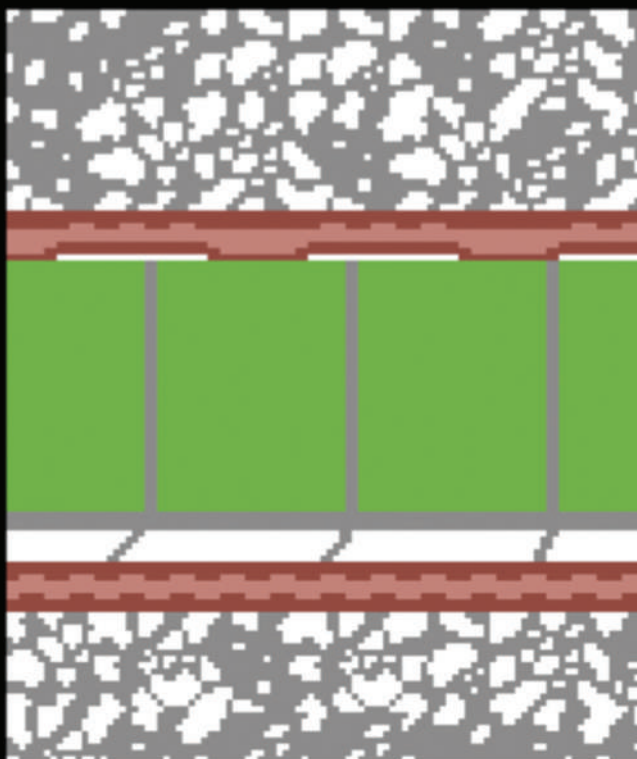
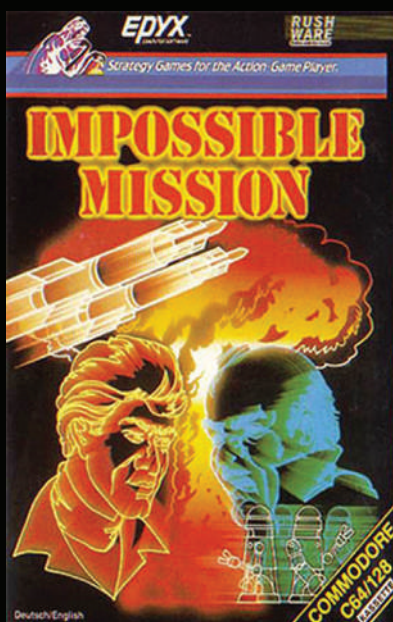


When Epyx came up with *Summer Games*, the Commodore 64 was hardly lacking in sports titles. The developers created a game that was easy to pick up and play and was graphically one of the best looking titles on the market at the time joining those games that were 'easy to learn and hard to master'. With up to eight people being able to compete against each other, *Summer Games* offered a great single-player AND multi-player experience i.e. it was great for parties. The game provides a nice selection of events in its own right, but gamers who also later purchased *Summer Games 2* on disk could actually combine the games and compete in a massive 16-event tournament, one of the first examples of a sequel connecting and expanding on the original. The later games in the Epyx series tended to offer much more variety in the scenery on each event – with *Summer Games* competition tracks and spectator stands are the order of the day – the character animations are impeccable though thus cementing *Summer Games* as the top athletic sporting event game at the time of release.

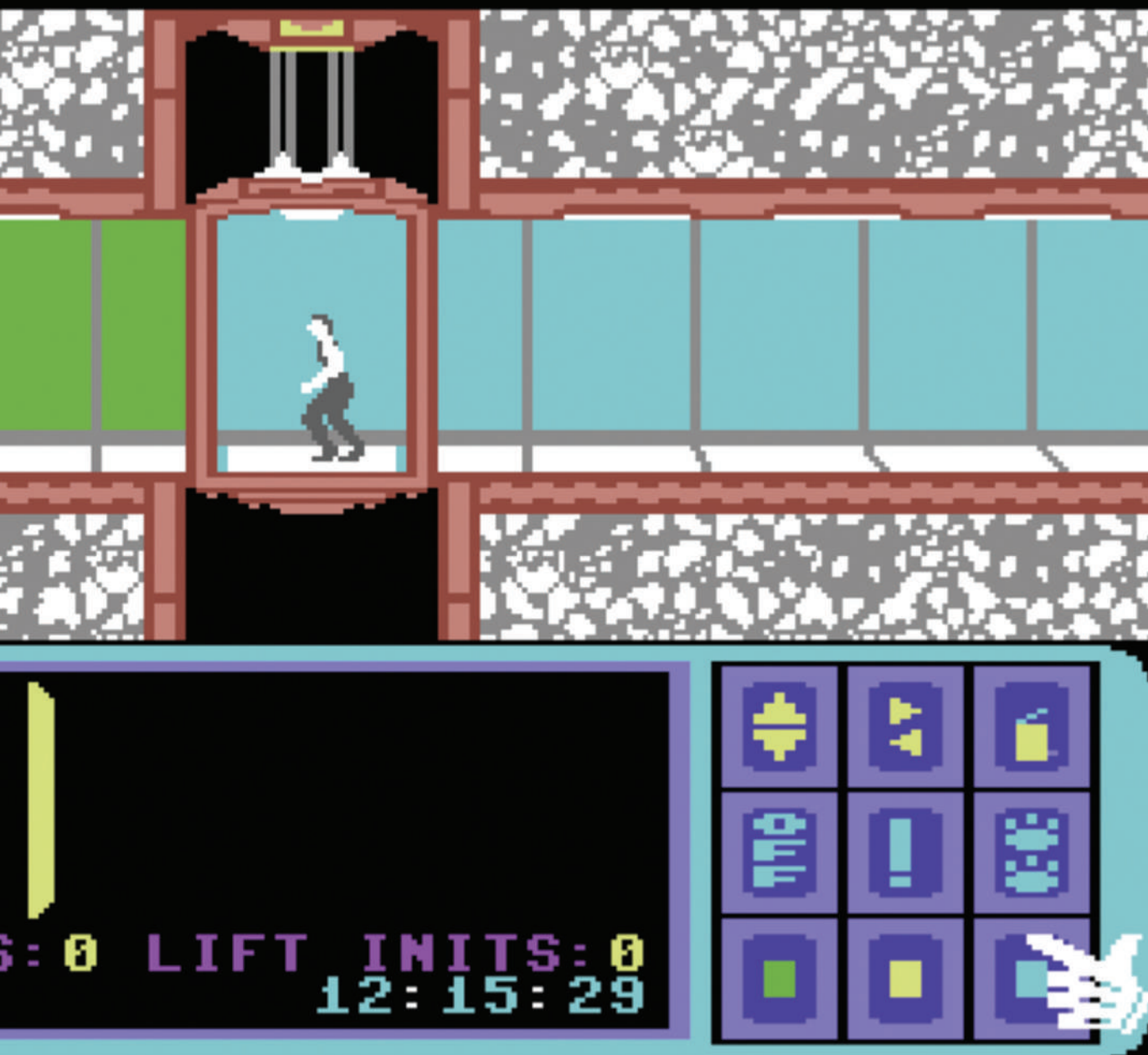




Name : Impossible Mission  
 Year : 1984  
 Publisher : US Gold  
 Author : Dennis Caswell



The simple and sometimes garish design of *Impossible Mission* hides an excellently animated, expertly coded and extremely atmospheric game. It showcased one of the earliest examples of randomising room and enemy placement and behavior to make each gaming experience unique. The animation for our agent was stunning for the time with him being remembered fondly for his impressive somersaults – the robot designs on the other hand give a nod and wink to our very British Daleks. Adding to the atmosphere are arguably the most famous spoken lines in Commodoredom, along with one of the spine-jangliest terrifying death screams you will ever hear. Your mission, should you choose to accept it, is to run from room to room looking for pieces used to decode the password to Elvin Atombender's secret hideaway and foil his plan to destroy the world. Think you'll stay a while? I'm sure you will end up staying forever, just like the rest of us did with this game.



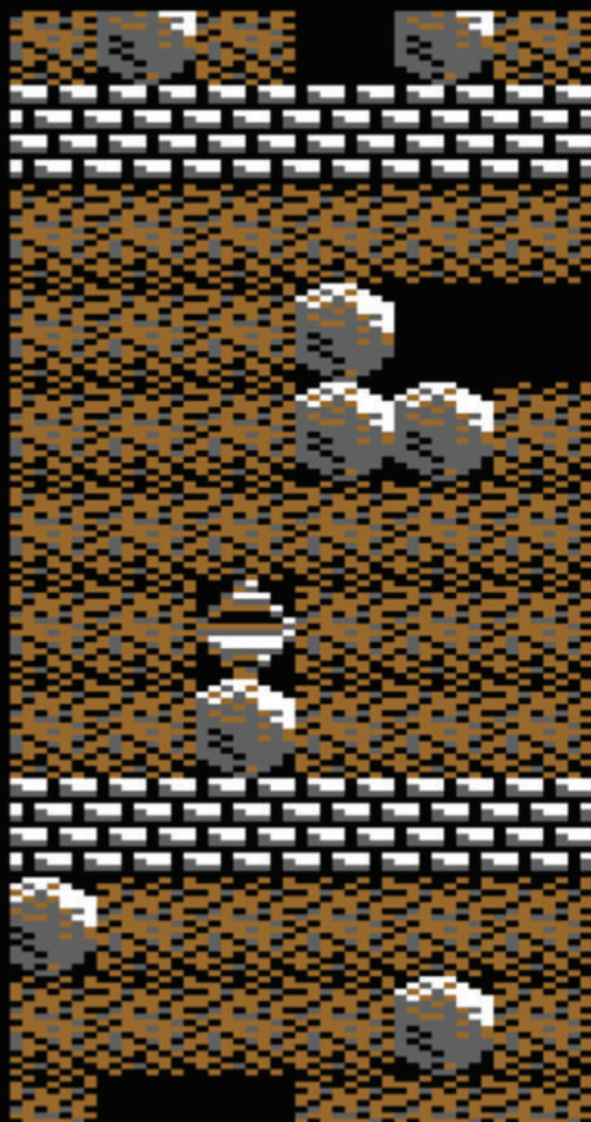
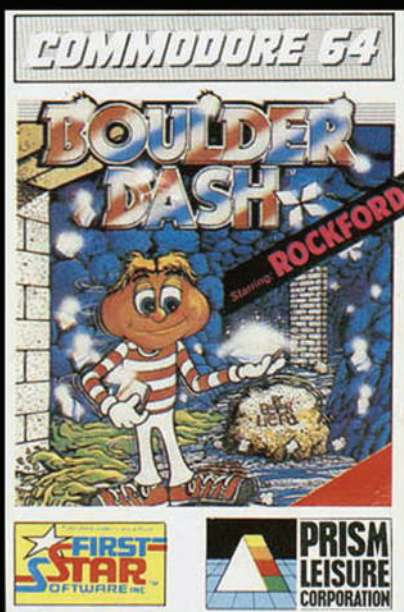




Name : Boulder Dash  
 Year : 1984  
 Publisher : First Star  
 Author : Peter Liepa, Chris Gray



12010



I'm sure no one will disagree that *Boulder Dash* is a great game to show off the brown colour palette of the Commodore 64. The simplistic graphics and limited colour set front an addictive search and collect game wherein diamond gems are the currency. Rockford is an unusual creature who digs tunnels just for fun with an alarming nimbleness across 16 levels of ingenious layouts with five different levels of difficulty. Later levels include crushing butterflies that turn into precious crystals ready for collecting and amoebas that block paths, usually just where Rockford has planned his escape route. *Boulder Dash* is an addictive, often frustrating, game but one in which you will find yourself coming back to again and again for one more go. A sequel called *Rockford's Riot* was followed by *Boulder Dash III*. To add further longevity to the game series, First Star released *Boulder Dash Constructon Kit* allowing the creation of new Boulder Dash levels by the gamer – Zzap! 64 gave it a whopping 97% in issue 20, Dec 1986.

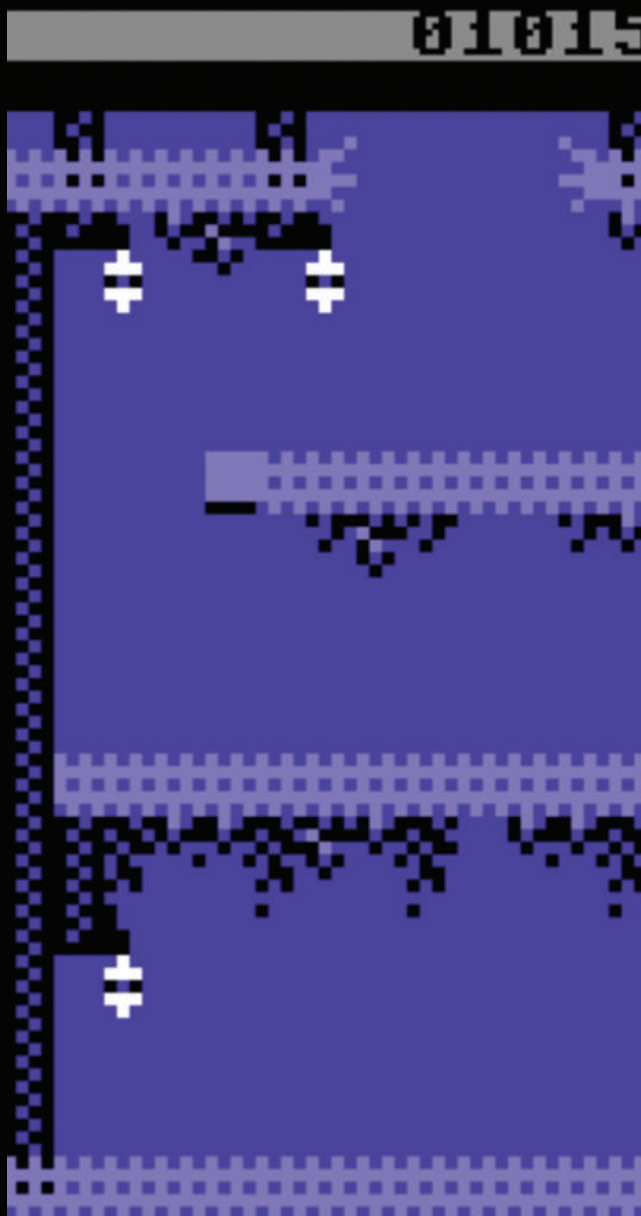
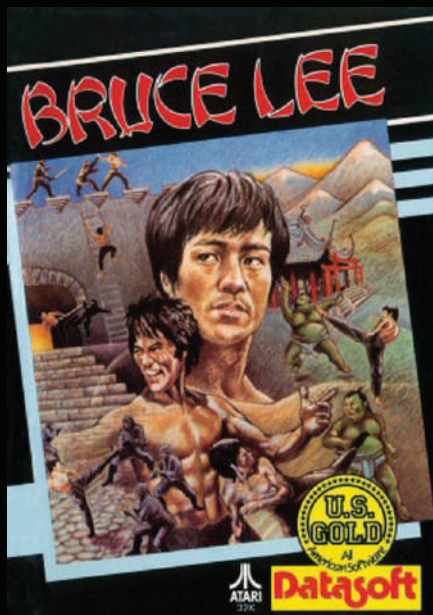
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Name : Bruce Lee  
 Year : 1984  
 Publisher : US Gold  
 Author : Ron J. Fortier, Kelly Day,  
 John A. Fitzpatrick



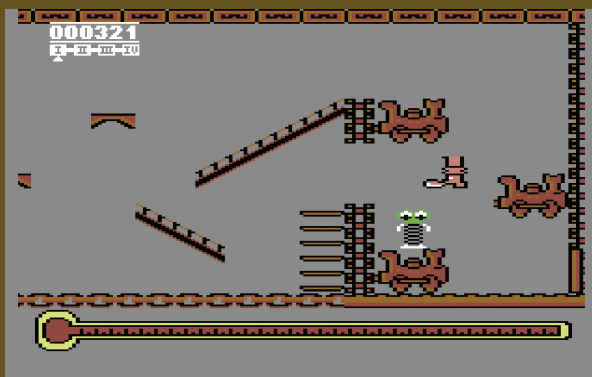


If you want to make a game about kicking ass, Bruce Lee seems like the most obvious licensing choice for guaranteed sales. However, the first official game based on the martial arts legend made the slightly odd (but possibly prophetic) decision not to base it on any of his movies, instead throwing him into a pixelated quest to pick up lamps and flick switches while trying not to get knocked sideways by a ninja and a green sumo wrestler. The quest eventually takes him underground, to a world of fiery explosions, odd lasers and spiked floors. Strangely enough, the concept is delightfully charming. The fighting in *Bruce Lee* could have been better; your attacks are limited to a useless punch and a very useful flying kick, but the platforming sections work reasonably well and the simplistic graphics grant this single-load game a nice diversity in levels and worlds. Now, if only someone could make a movie out of this insanity, I'd be made up.

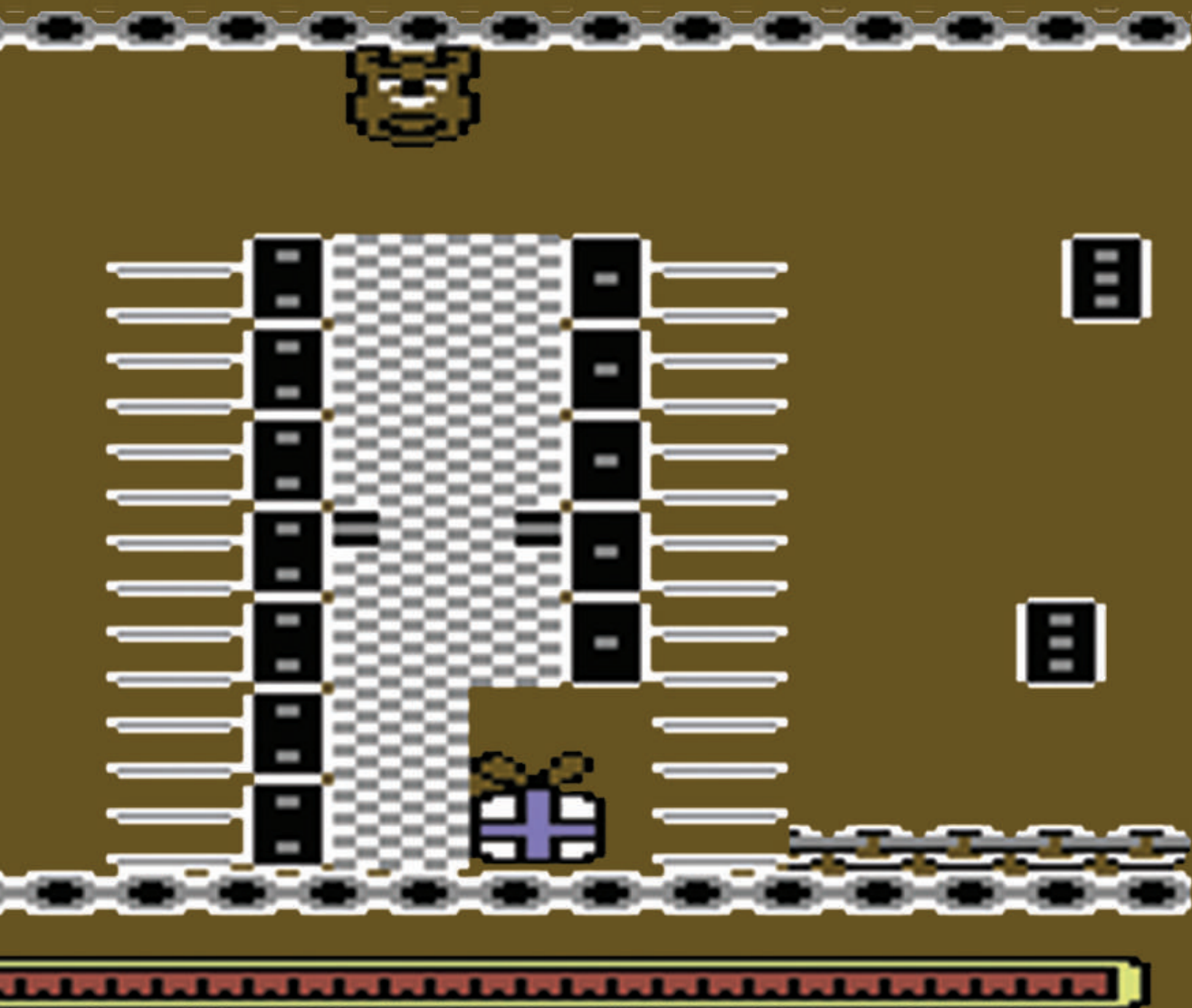




Name : Thing on a Spring  
 Year : 1985  
 Publisher : Rainbow Arts  
 Author : Jason Perkins,  
 Rob Hubbard



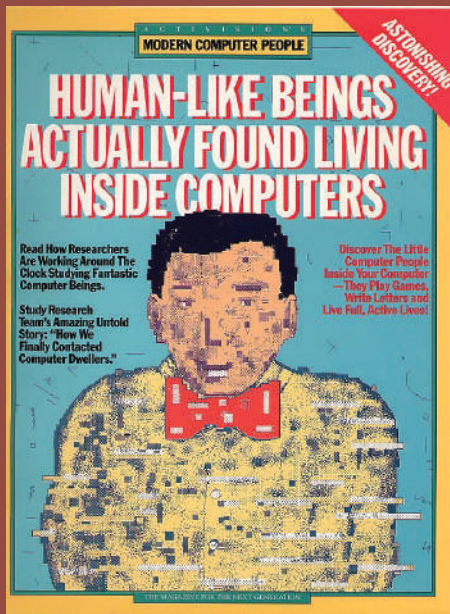
Gremlin Graphics had many great characters in their games over the years, but when *Thing on a Spring* appeared as a mascot in the margins of the magazine *Zzap! 64* his fame went through the roof. Thing finds himself embroiled in the nasty doings of 'The Evil Goblin' who has taken over the Toy Factory. Our springy friend must stop him by collecting the puzzle pieces spread around the factory whilst avoiding disappearing platforms and conveyor belts and enemies that drain his oil if even the slightest contact is made. When the oil meter is depleted, Thing gets a little bit rusty, seizes up and ultimately its 'game over' for the player. The graphics in this game are incredibly cutesy with plenty of colour being splashed around the screen, but it is the music that becomes the most memorable aspect of the game – Rob Hubbard's bouncy tune was well received by *Zzap! 64* who claimed that even the London Symphony Orchestra could not do better! Thing returned in the sequel *Thing Bounces Back*, a much trickier game that is not as loved as the original.





# ACTIVISION HOME COMPUTER SOFTWARE

Name : Little Computer People  
Year : 1985  
Publisher : Activision  
Author : David Crane, Russell Lieblich

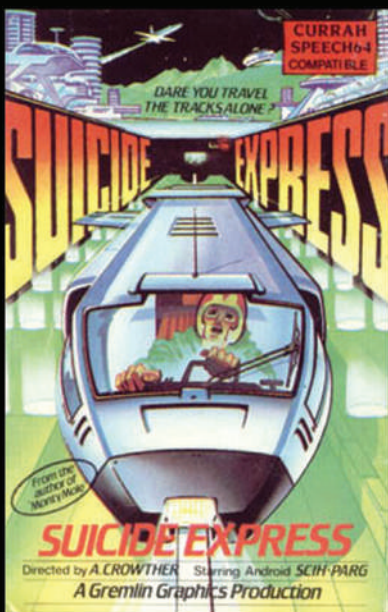


David Crane and Activision wanted to try something different in the mid-80s, and the end result was the *Little Computer People Discovery Kit* containing the *House On A disk*. A side-on view of a miniature house with a number of rooms takes up the screen, with each room having an activity or movement associated with it. Into this house moves a Little Computer Person (LCP) and his pet dog; a unique code on each disk gave the little person a different name and appearance. The player had over two hundred words to use to interact with the LCP, sending him books and records, asking him to write a letter etc. Food and water must/should be topped up to prevent the LCP falling ill or the player could simply sit back, if they wanted, and just watch the LCP go about his daily routine. Many years before Will Wright created *The Sims*, and Big Brother hit Channel 4, C64 users were interacting and watching little people living inside a house on their computer.





Name : Suicide Express  
 Year : 1985  
 Publisher : Gremlin  
 Author : Tony Crowther



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 PRESENT:-



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LEVEL F1

000000 SCORE TRAINS 03 01 20 HI-SCORE 0000

SUICIDE EXI





**S**uicide Express was the second of three similar games created by Tony Crowther and Ben Daglish. First came *Loco*, inspired by the arcade game *Super Locomotive*. *Suicide Express*, published by Gremlin, added a sci-fi appearance to the basic gameplay, while *Black Thunder* was released by Quicksilver and was pretty much more of the same. The latter two games do utilise the Currah Speech cartridge to provide speech during the game, thus adding a little more variety. All the games share a similar split-screen display with the player's vehicle depicted on a horizontally-scrolling plane at the top, with a map of the interconnecting tracks that can be switched below. The aim of *Suicide Express* is to amass a grand total of 100,000 points to escape the planet – this is no easy feat even for the hardened gamer. Obstacles that are put in your way include hovercraft, jet bombers, falling bombs and 'watchers' who get a little irritated if shot and home in on you. Ammunition can be collected along the way, which is essential if you want to clear hazards for your journey to continue.





# Melbourne House

Name : The Way of the Exploding Fist  
 Year : 1985  
 Publisher : Melbourne House  
 Author : Gregg Barnett, David Johnston,  
 Greg Holland



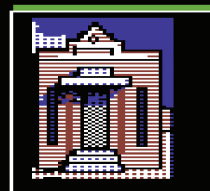
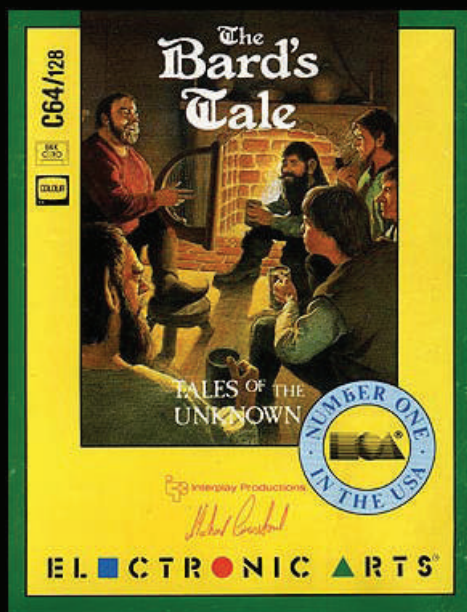
**K**arate *Champ* was one of the earliest one-on-one fighting games to hit the sea-side arcades and set the formula for the genre and the standard for those who followed to improve on. Beam Software and Melbourne House took on the challenge and wrapped many of *Champ's* ideas into a highly playable game and called it the mouthful that is *The Way of the Exploding Fist*. In single player, you take on a series of increasingly tough opponents in timed bouts to earn yourself a higher 'Dan', the aim ultimately per fight to score two full 'points' (shown by yin and yang symbols) with full and half points awarded based on how well an attack connects. With a variety of kicks and punches, the combat does tend to get close up, personal and quite tense with bonus rounds regularly appearing involving charging bulls! *Fist* shines most brightly in two-player mode where fellow gamers can challenge each other over three bouts to a winner. *Fist* set the standard for this genre on the C64 on its release.







Name : The Bard's Tale  
 Year : 1985  
 Publisher : Electronic Arts  
 Author : Michael Cranford  
 Larry Holland



Skara Brae

The Bard's Tale

You are on Main Street.  
 It's now early morning.

Character Name	AC	Hits	Cond	SpPt	CI
HERLIM	8	Dead	0	20	Co
ROGER	10	10	10	19	Co
OMAR	9	20	20	14	No



Thieves

Character

S) HERLIM  
 1) ROGER  
 2) OMAR  
 3)  
 4)  
 5)  
 6)

The Bard's Tale

By Michael Cranford



"The song I sing  
 Will tell the tale  
 OF a cold and wintry day:"

The *Bard's Tale* was the first in a long running series of role-playing games, and was a rarity on the C64 in that it was released on tape as well as disk. In this particular adventure it is just you and up to five followers that have free reign to explore a vast city with 15 dungeons. Sounds easy enough, but this world is full of monsters that are more than happy to take your gang on. Each of your mates has a unique profession thus giving them varying abilities to fight those who want to cause your group harm – magic can be cast, items used or even singing can damage and eliminate the attackers. All the exploration elements of the land take place in a small 'first person' window – those who attack you also use this space and a small animation of your enemy fills this area when they attack. *The Bard's Tale* is huge and will take many a week to explore and level up before taking on Mangar, the evil Wizard, to vanquish him once and for all. Stunning.

The Bard's Tale

The sudden scream of battle brings your party to a halt. You face 4 Thieves.

Will your stalwart band choose to (F)ight or (R)un?

Name	AC	Hits	Cond	SpPt	CI
	9	Dead	0	20	Co
	10	10	10	19	Co
	9	20	20	14	Ho



Name : Elite  
 Year : 1985  
 Publisher : Firebird  
 Author : David Braben, Ian Bell,  
 David Dunn, Aidan Bell





**E***lite* is a combination of a 3D space shooter and an economic simulation and is one of the very first C64 vector based games. You play a character called Commander Jameson, who is both a captain and a trader. With your spaceship you fly from star system to star system – the galaxy in the game seemingly infinite. On the economic side of things you have to keep and manage lists to keep track of the prices and items you bought – these can then be sold in other star systems often making big profits. With the earned credits you can then upgrade your spaceship – one of the initial recommended improvements is a docking computer, the second is some new lasers that can be used to fight off the space pirates who are continuously after your precious cargo. And the missions; hands up who didn't regret helping the Prince of Thrun, with his cuddly Trumble? *Elite* pays homage to everything a sci-fi fan could want for and is a true classic.

Marc Rijnders

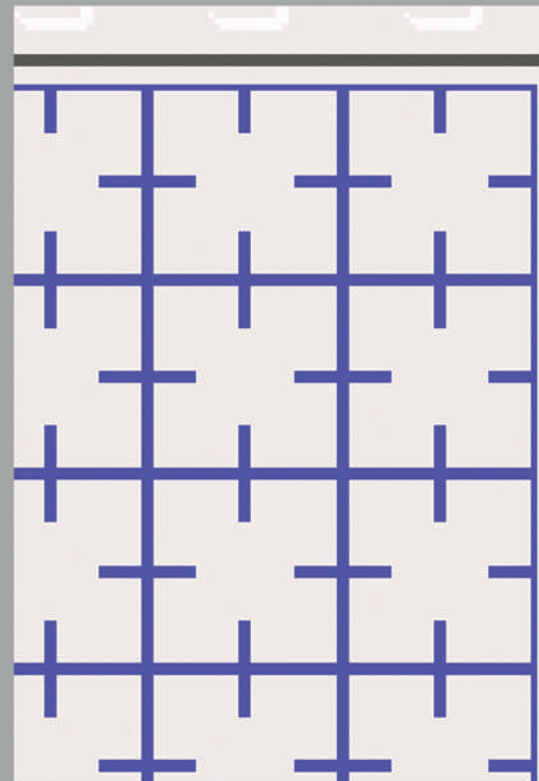


# HEWSON

Name : Paradroid  
Year : 1985  
Publisher : Hewson  
Author : Andrew Braybrook



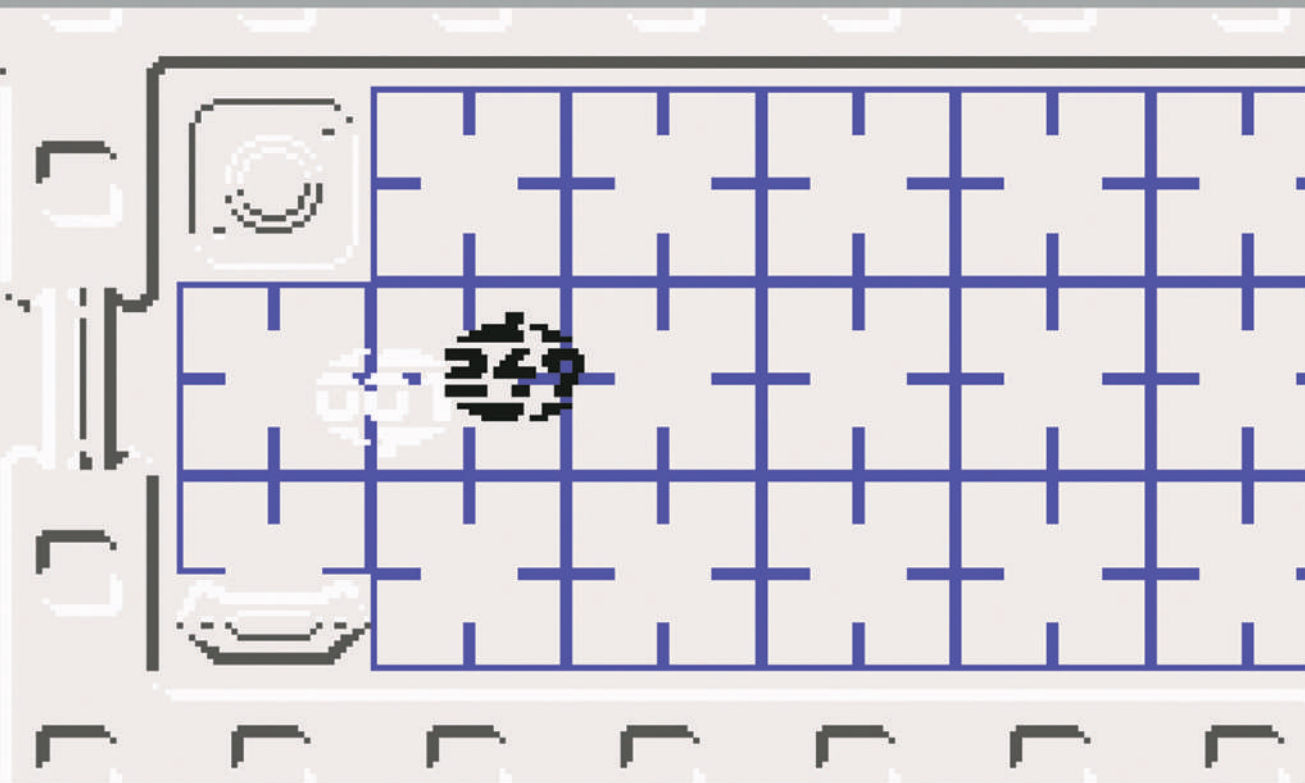
## Mobile



Andrew Braybrook took inspiration for *Paradroid* from a game he created many years before on a mainframe computer that cleverly only showed enemies in the player's line of sight. This mechanic adds a great deal of tension and atmosphere to *Paradroid* as the player controls the Influence Device (number 001) through corridors and rooms in the decks of a large space freighter. The action is viewed from above, as if looking at the vessel's blueprints, and what becomes obvious very quickly is that the ship's robots have gone berserk and have taken over! The challenge is to regain the ship by either destroying each robot or by persuading them to join your gang by playing a game of 'circuits'. Losing the game destroys a player's robot and if that is the Influence Device then the game is over – winning sees the enemy robot join the fold. With detailed metallic graphics and superb presentation (including the computer system providing in-game information and portraits of the 'droids') *Paradroid* offers a unique experience.

## Paradroid.

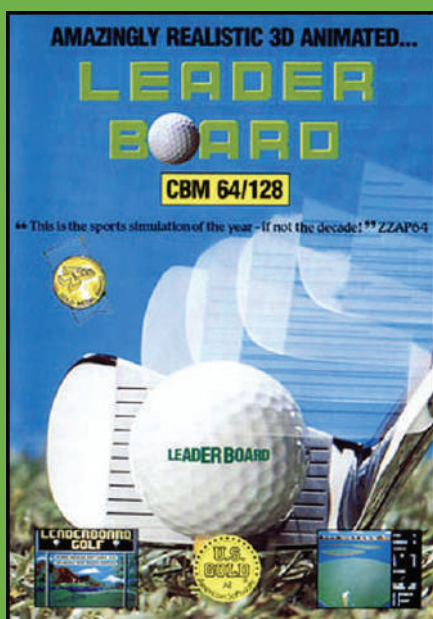
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Name : Leaderboard  
 Year : 1986  
 Publisher : US Gold  
 Author : Bruce Carver, Roger Carver

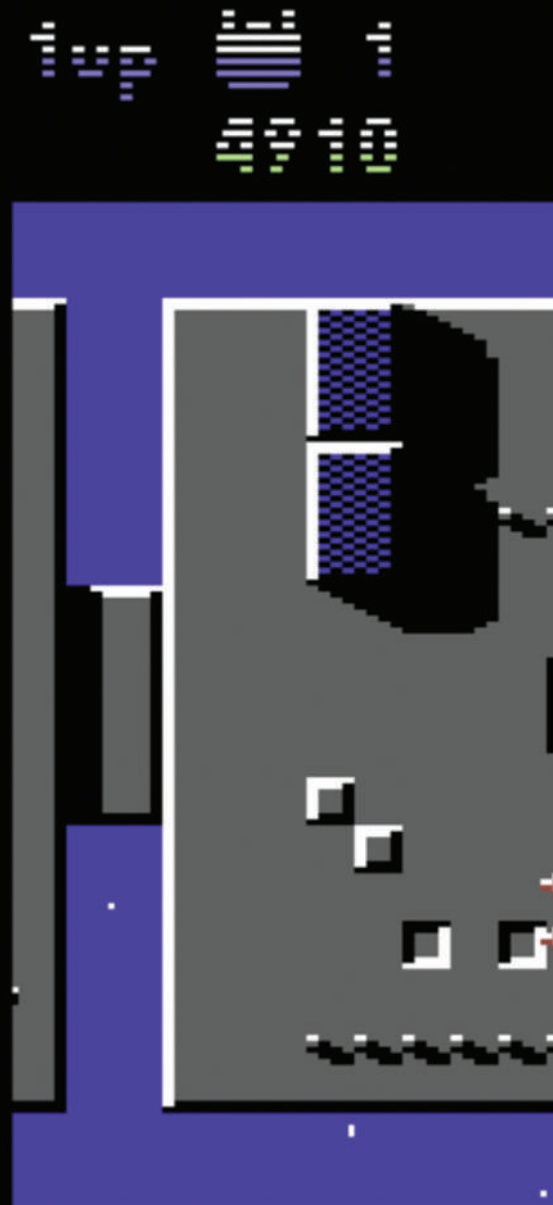
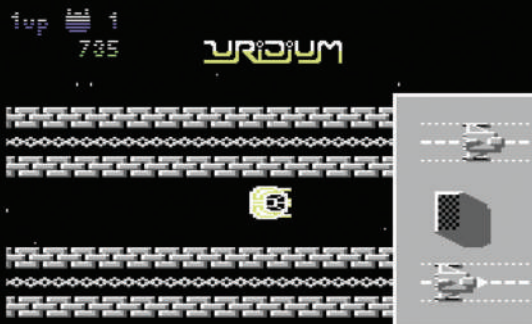
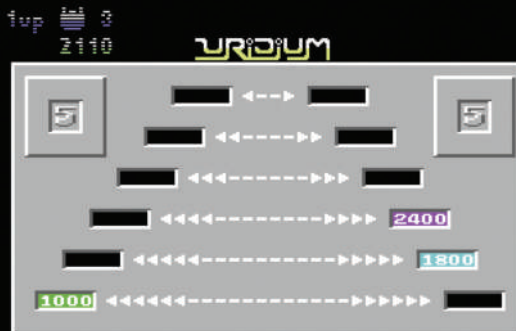


**L**eadersboard was the first in a long series of golf games from Access and instantly became a hit with C64 gamers. The smooth animation of the game's golfer came from tracing a video of Access founder Roger Carver's golf swing. The key to the game was the power meter whereby holding fire set the strength of shot (or putt) and a second timed press set the angle of its projection. Each hole is drawn using a unique routine that outlines the view first, then then fills each area with the relevant colour – green for grass, blue for sky etc. The increasing expanses of water on subsequent holes and the introduction of weather effects, namely wind, ensured that the game remained a gruelling challenge to even the seasoned golfer. Four built-in courses came as standard with four more on offer in the add-on *Leadersboard Tournament*. The *Executive Edition* went one step further and added trees to the landscape, while *World Class Leadersboard* introduced three famous courses (including St. Andrew's). Access subsequently created the *Links* series for PC for Microsoft.



# HEWSON

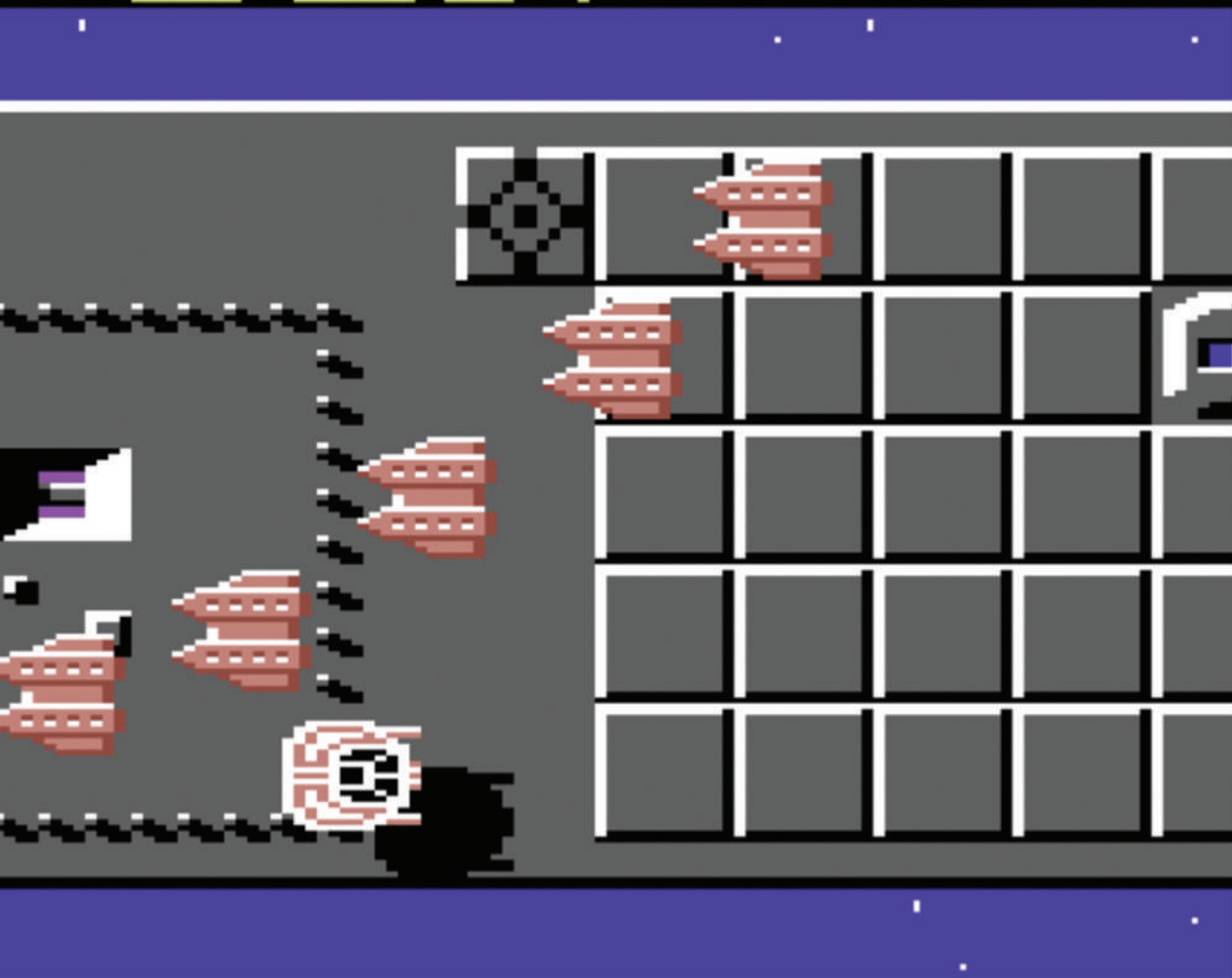
Name : Uridium  
Year : 1986  
Publisher : Hewson  
Author : Andrew Braybrook,  
Steve Turner

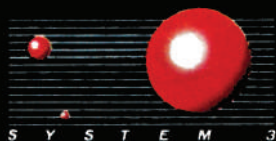




**U***ridium* was Andrew Braybrook's foray into the fast and furious side scrolling shoot 'em up. Piloting your Manta fighter across a number of Dreadnoughts whilst avoiding dangerous structures and blowing up buildings on the surface is the name of the game here. Did we mention the waves of enemy craft that spiral in launching their missiles at your shield-less craft? Best to destroy those as well. Survive for enough time on a Dreadnought level and a LAND NOW alarm sounds, encouraging the location of the correct landing strip to be sought and the Manta ship safely landed. No rest for the wicked as they say – this then starts the bonus round, with a sequence of flashing values bouncing left and right across a pyramid of extra points – hitting fire at the right time results in a win or loss. With the bonus game complete, the Manta then flies back over the Dreadnought as it self-destructs in glorious pixelated fashion. The gorgeous bas-relief graphics of *Uridium* are complemented by varied and detailed enemy designs and an agile Manta craft that flips and rotates as the Dreadnoughts are explored making this fantastic shooter a visual treat.

## URIDIUM



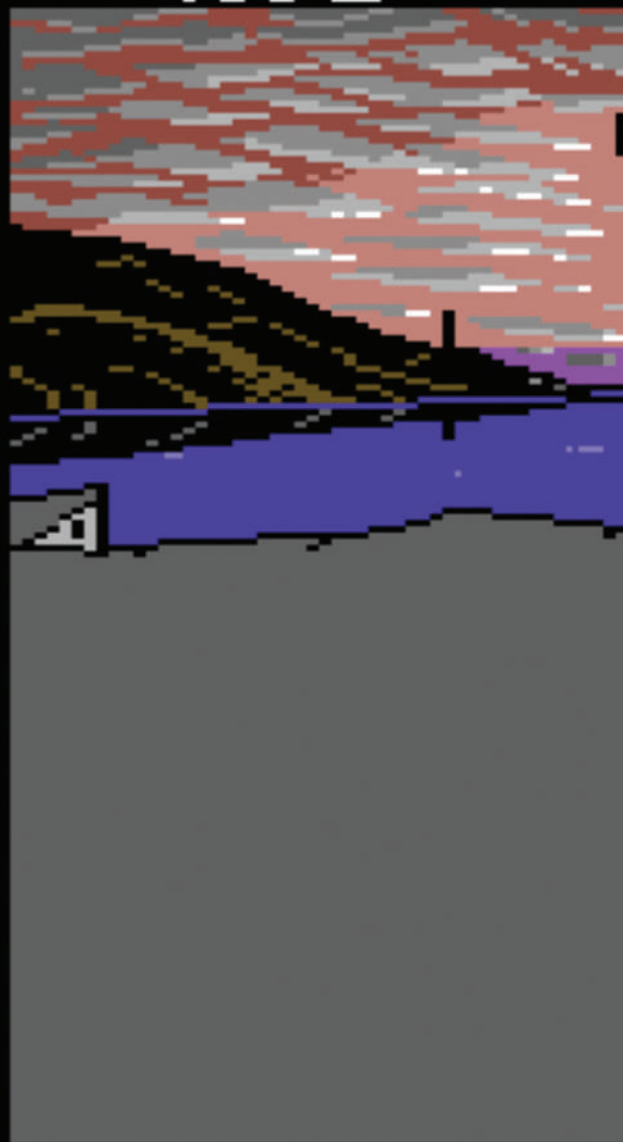


Name : IK+

Year : 1987

Publisher : System 3

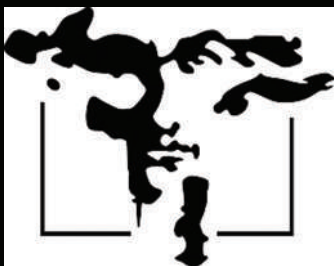
Author : Archer Maclean



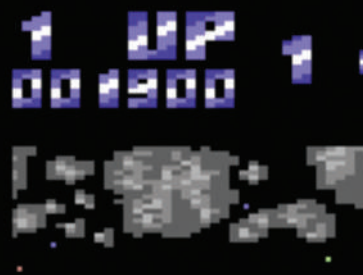
Despite the bizarre decision to name this game *Chop 'n Drop* in the US, *International Karate Plus* continues System 3's venerable *IK* tradition of having large, well-animated martial art fighters sparring with each other to score points with well-placed strikes. To up the stakes, *IK+* makes it a free-for-all between three characters, allowing the two that score the most points to continue to the next round. To sweeten the deal the game has a ton of Easter eggs; like letting you change the background colours or the way the sun ripples in the water; initiating cute visual touches like a spider rapelling down the screen, or even some pants-dropping! The introduction of the third fighter does evolve the one-on-one fighter; granted, it's not a three player free for all (the blue fighter is computer controlled) but now with the option to take out both your opponents with a well-timed split kick, *IK+* proves to be is immensely satisfying.







Name : Delta  
 Year : 1987  
 Publisher : Thalamus  
 Author : Stavros Fasoulas

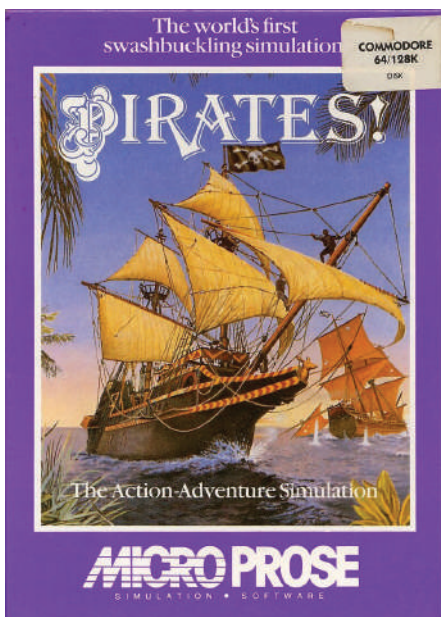


Finnish programmer Stavros Fasoulas had burst onto the scene with his first game *Sanxion* (initially known as *Rainbow Warrior*) which was published by software house Thalamus. *Delta*, the follow up, is an impressive horizontally scrolling shoot 'em up that mixes up elements of *Sanxion*, *Salamander* and *Nemesis*. The player's ship takes on wave upon wave of enemies, earning a token for each complete wave destroyed. These tokens can then be traded in by flying over the row of power-ups, with only the affordable icons lit. Power-ups fade after a while, making the selection quite important. Asteroids and moving columns provide additional hazards before the player encounters large end of stage bosses that fill the screen. Opinion was divided on the success of *Delta* – was it just about memorising attack waves, or was it a great shoot 'em up? It certainly looks and sounds the part, with excellent graphics and an outstanding Rob Hubbard soundtrack (mixing Pink Floyd with Phillip Glass).



# MICRO PROSE®

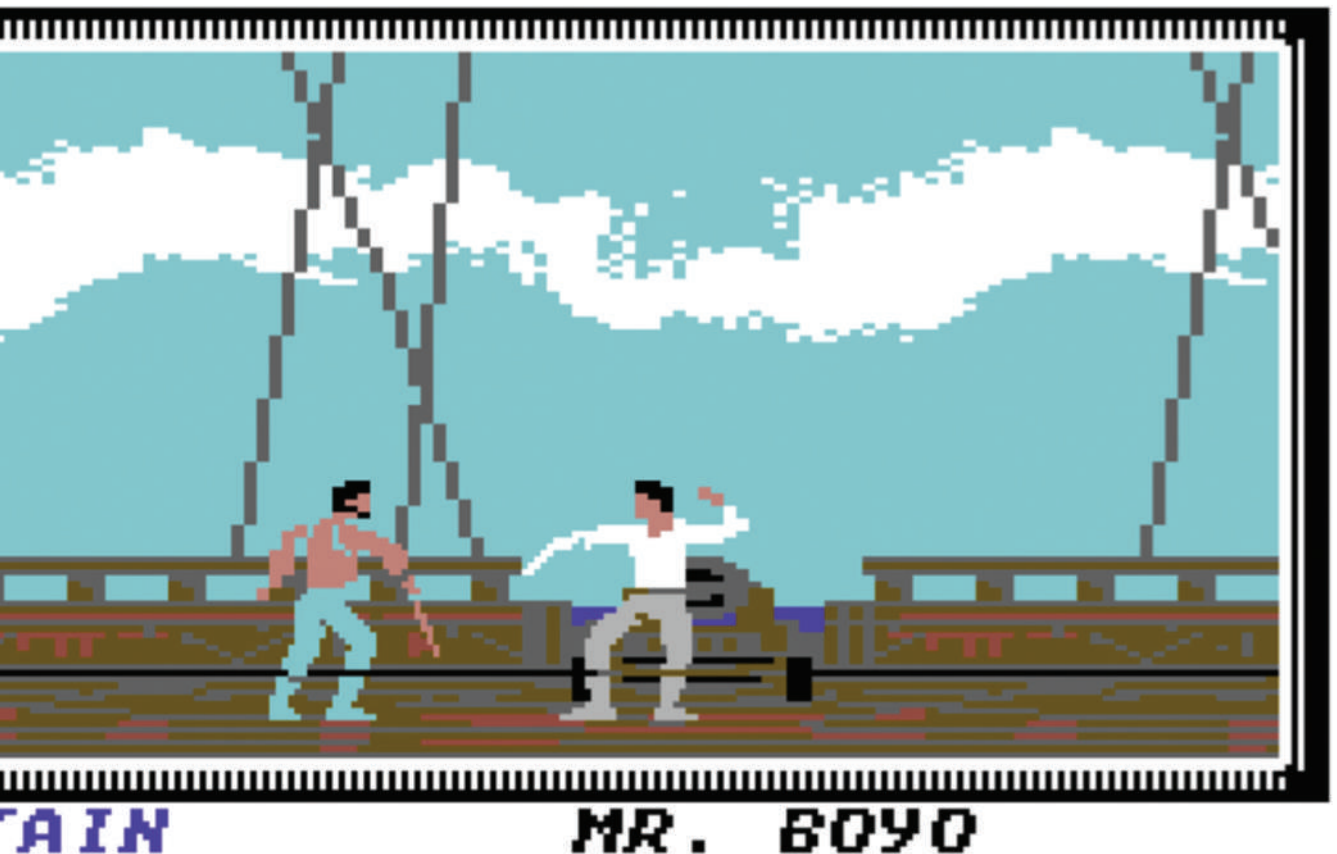
Name : Pirates  
Year : 1987  
Publisher : Microprose  
Author : Sid Meier





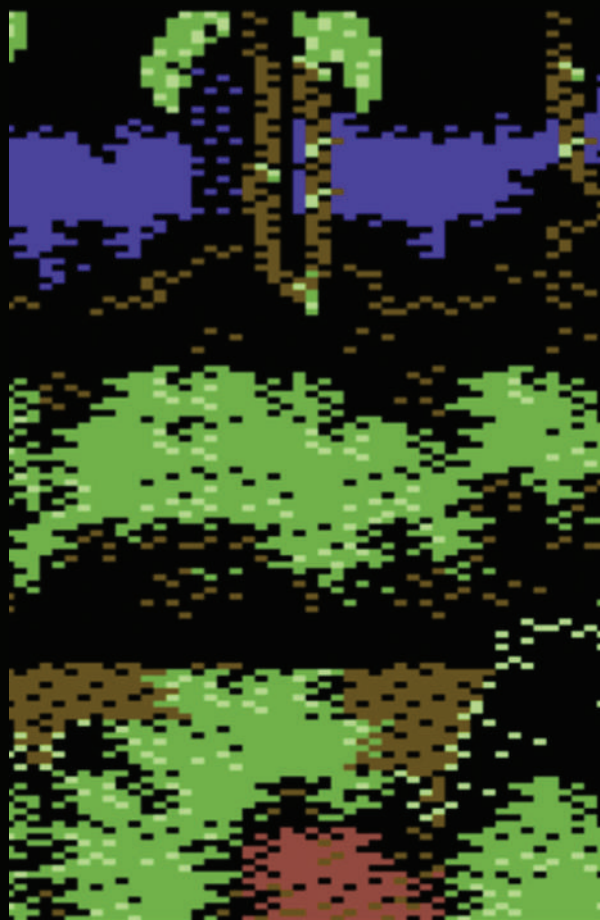
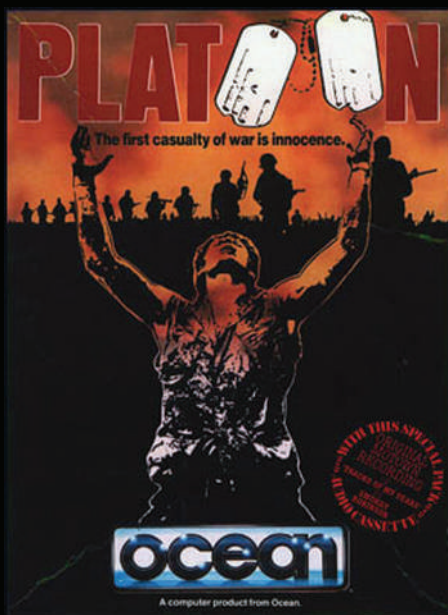
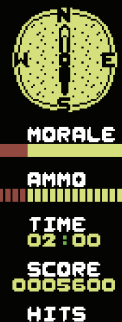
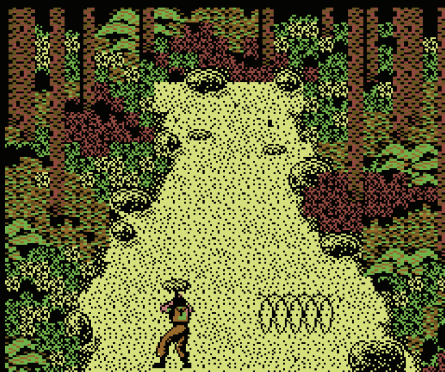
Originally released for the Commodore 64 and then, thanks to its huge success, rapidly ported to numerous other platforms, *Sid Meier's Pirates!* is one of the many mega hits from the Microprose camp. This simulation video game allows the player to become a pirate in an open world set in the Caribbean in the 16th & 17th centuries. The characteristics of those different periods are relatively well reconstructed in the game so depending on the selected century, the presence of different nations (Spain, France, Netherlands and Kingdom of England) and even different types of vessel will be depicted. As the captain of a crew of pirates the aim of the game is to improve your reputation and increase your wealth. So the first thing to do is to get yourself a boat and a crew, set sail and then get on with some pirating! Plunder towns, duel captains and commanders, and journey through the Caribbean causing havoc in every town you stop at. An early game from Sid Meier who went on to give the gaming world *Civilisation*!

Pierre Mengal

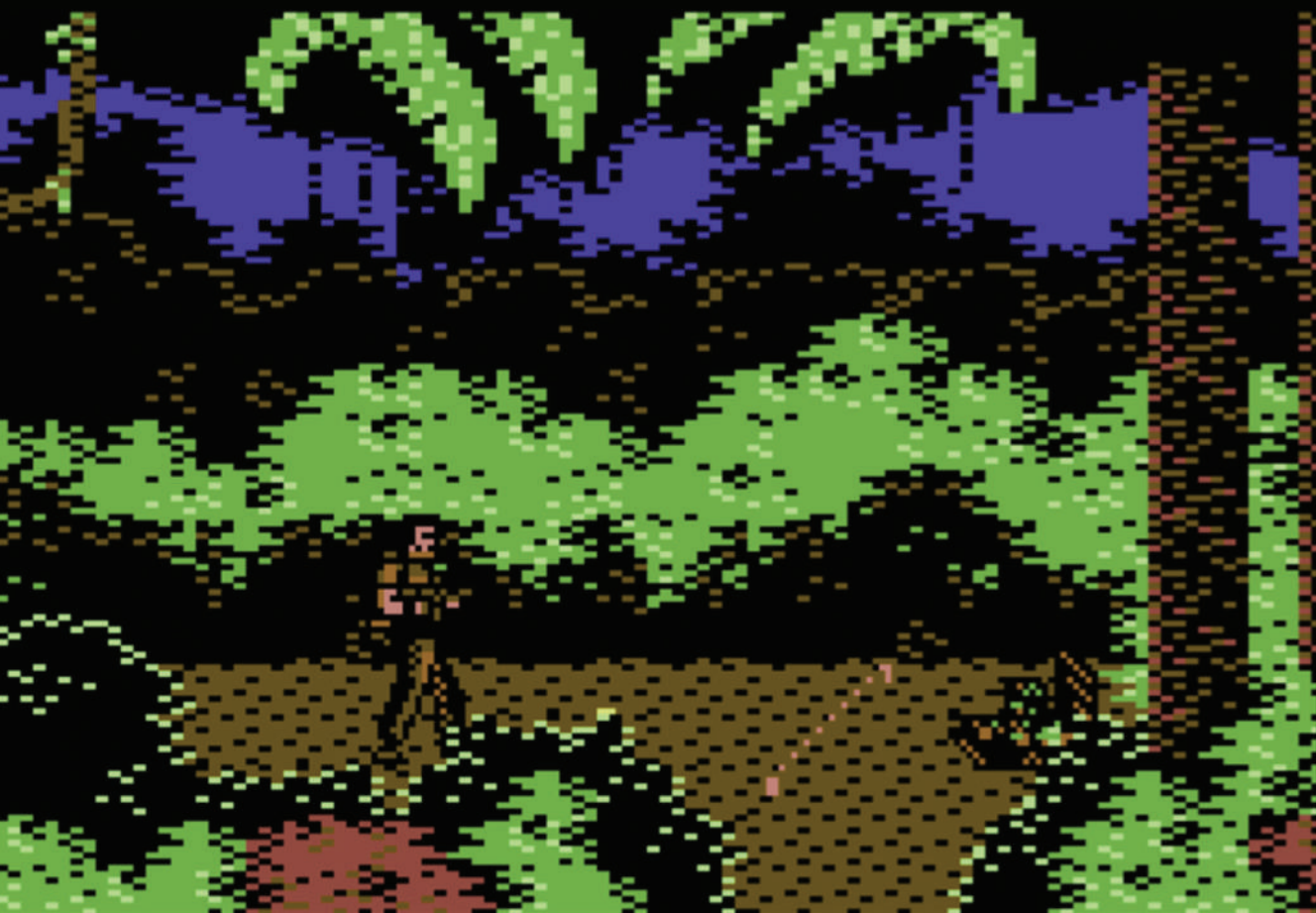




Name : Platoon  
 Year : 1987  
 Publisher : Ocean  
 Author : Simon Butler, Zach Townsend,  
 Andrew Sleigh, Jonathan Dunn,  
 Martin McDonald



Ocean Software secured the rights to *Platoon* and promoted its video release of the film on the game loading screen – inside the packaging was also found a free audio tape of Smokey Robinson's Tracks Of My Tears. *Platoon* comprises of multiple game types that recreate key moments from the film – avoiding tripwires and enemy patrols when meandering through the jungle; exploring the claustrophobic Viet Cong tunnel system that is filled with knife-wielding enemies popping out of the water to stab you; a night time assault involving pyrotechnic flares and then a run to destroy the enemy bunker – all before scones and tea. Having a squad to protect and switching between its members as they get injured adds another interesting mechanic to the game. A great design by Simon Butler, detailed graphics by Martin and a superb Johnathan Dunn soundtrack creates a great atmospheric romp in the jungle.



STATUS 005

HITS

MORALE

SCORE  
0001800







Name : Wizball  
 Year : 1987  
 Publisher : Ocean  
 Author : Sensible Software

wiztips one  
 getting started

shoot  ,  ,  etc..  
 pickup  to move 

wiggle joystick to select..

 thrust	 anti-grav	 beam
 double	 cat	 glazers
 wizenspray	 catspray	 shield



2 54



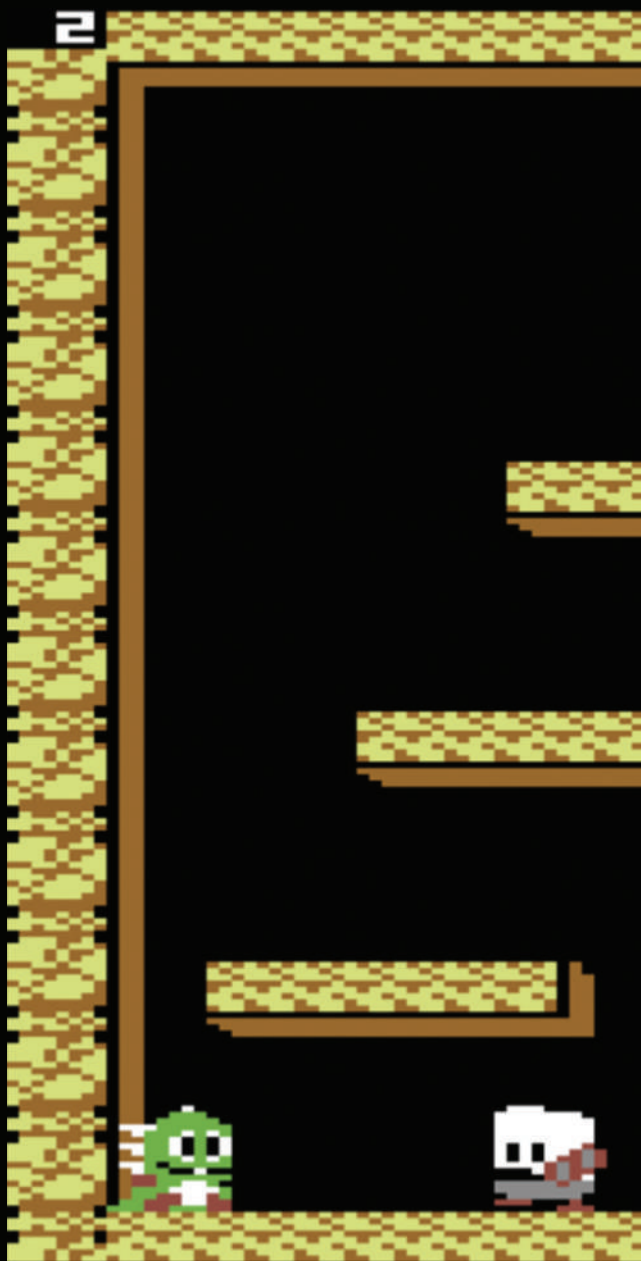
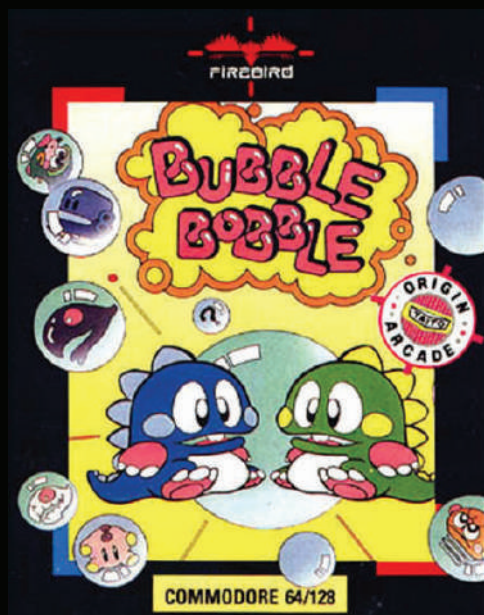
2

Sensible Software had impressed Ocean Software with its first game *Parallax* so both decided to work together again on *Wizball*, a painting by numbers shoot 'em up. At the start of the game the green 'smiley' ball bouncing around the grey landscape is pretty hard to control, but collecting the green pearls gives vital power ups – starting with thrust and anti-grav and then extra weapons. The third power-up is the vital 'catellite' companion that allows the player to collect falling drops of colour. These are stored in cauldrons and mixed to colour in the level – three different shades needed to complete each of the eight levels. With a variety of enemies, a tricky bonus section and brilliant music from Martin Galway (including two tunes based on real guitar work by Jon and Chris), *Wizball* scored highly with the magazines and is best appreciated on the C64 – the game's original format. The Amiga sequel, *Wizkid*, did not share the success of the original.





Name : Bubble Bobble  
 Year : 1987  
 Publisher : Firebird  
 Author : Stephen Ruddy, Andrew Threlfall, Peter Clarke





Taito's *Bubble Bobble* was a huge hit in the arcades, with its cutesy graphics and addictive one-more-go gameplay, it proved a hit with everyone. The C64 had its fair share of arcade conversions but Software Creation's *Bubble Bobble* ranks amongst the best due to its faithful capture of the spirit and charm of the arcade original as well as including a fair share of the bonuses and Easter eggs that littered its levels. Playing as Bub or Bob in this one or two player game, each level has to be cleared of enemies by first blowing a bubble to capture them in, which you can then pop with a gentle nudge of your spiky dragon head. Bursting bubbles shower the levels with fruit and magic items that give extra speed, transportation to later levels or extending the range that bubbles can be blown. The 'plinky' music of the arcade version is captured perfectly by Peter Clarke, adding to the charm of this excellent and much loved conversion.



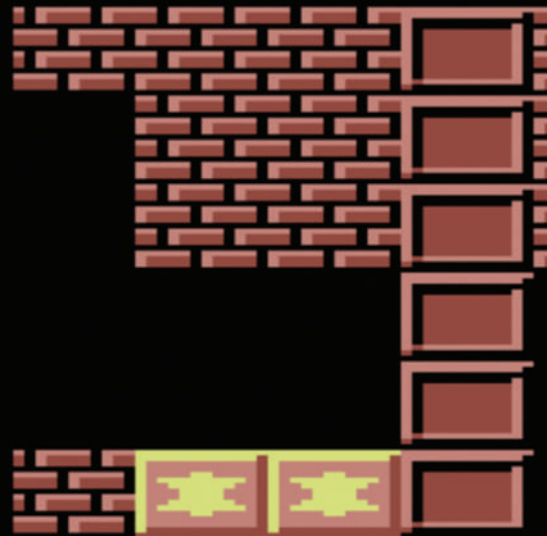


Name : The Great Giana Sisters  
 Year : 1987  
 Publisher : Rainbow Arts  
 Author : Manfred Trenz,  
 Chris Huelsbeck



GIANA  
 001460

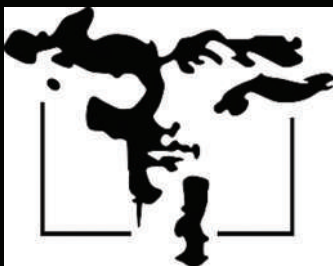
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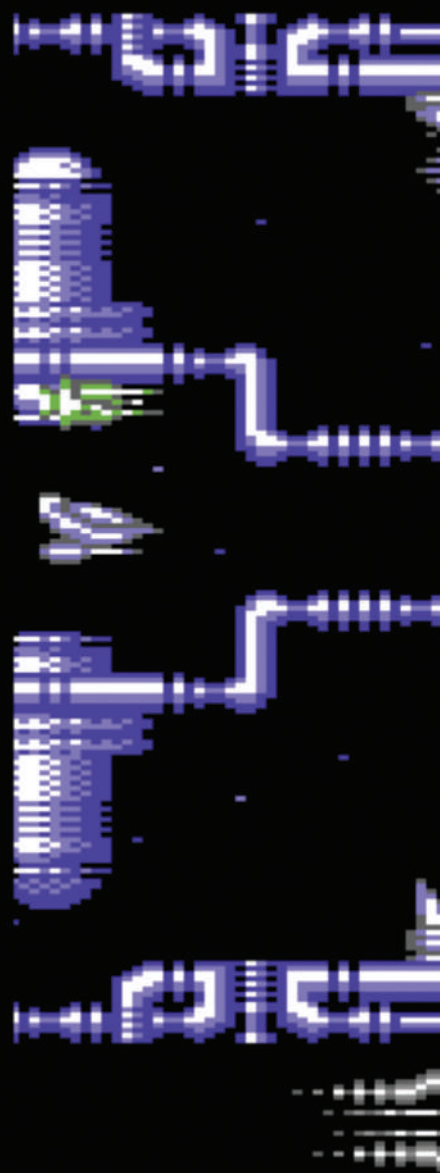
US Gold's aggressive advertising campaign for *The Great Giana Sisters* soon saw Rainbow Arts embroiled in controversy due to the similarities between their game and Nintendo's *Super Mario Bros.* To avoid any legal action, Rainbow Arts had the title removed from sale and cancelled a planned sequel. The game's back story sees Giana (and her sister in alternate two-player mode) travelling into a nightmare world which she must escape simply by waking up. It sounds easy – progressing through a world of platforms and block bashing to reveal power-ups was a little too familiar for some – a shame really as the cute and varied backdrops, complemented with some nice sprites and impressive music by Chris Huelsbeck makes for a great game – the best platformer on the C64 perhaps? Many C64 gamers think so.





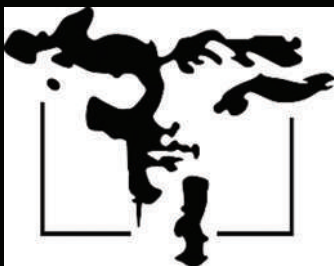


Name : Armalyte  
 Year : 1988  
 Publisher : Thalamus  
 Author : Dan Philips, Robin Levy,  
 John Kemp, Martin Walker

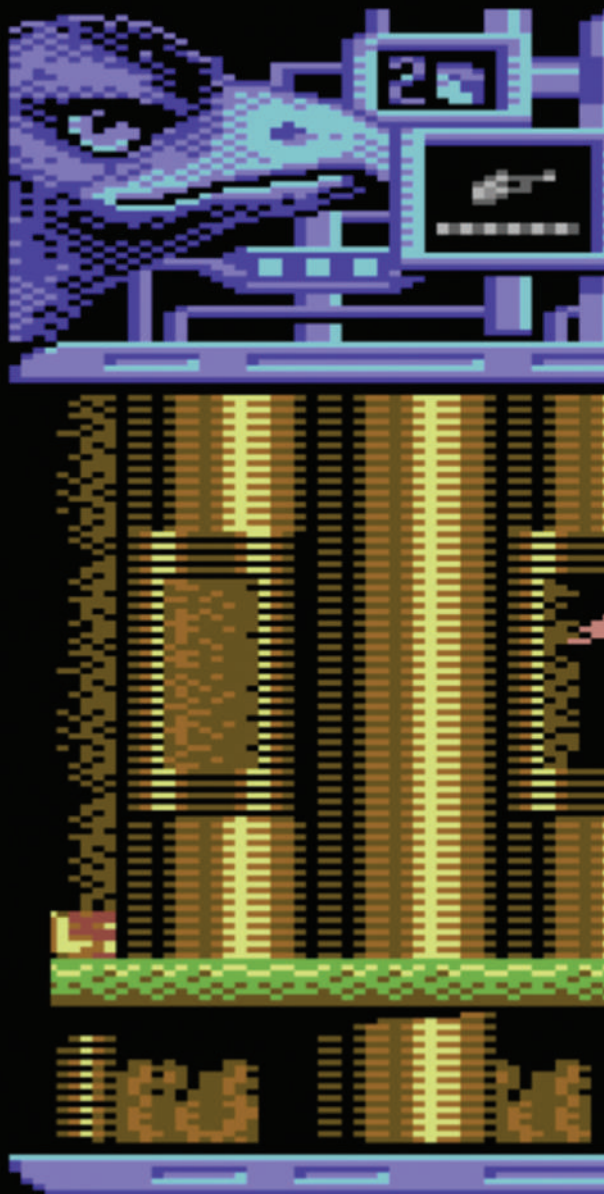
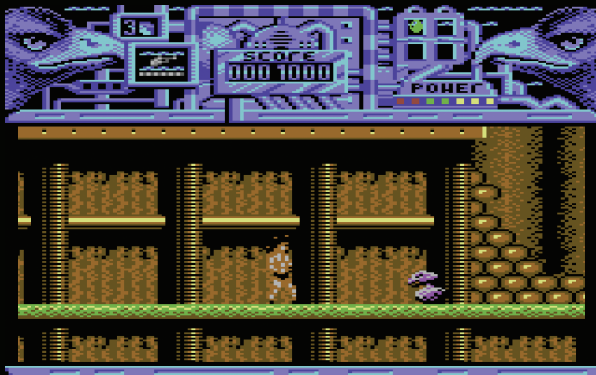


A talented group known as Cyberdyne Systems created their own homage to the horizontal scrolling shoot 'em up, and Thalamus chose to package it up as *Armalyte* and market it as the sequel to *Delta*. The title music was provided by Martin Walker, an accomplished programmer himself, and features a great techno sound and rhythm. The game plays very similarly to its prequel – the player must explore the Delta space for lucrative salvage, only to come across huge waves of enemies and giant bosses. All of this is presented with gorgeous background graphics and the sprite multiplexer throws masses of enemies on screen. Also impressive are the three super weapons (each with a different beam, fired by holding down the fire button) and the sight of your fully powered-up ship (achieved by shooting and collecting crystals). *Armalyte* starts tough and gets tougher as you progress deeper into Delta space. *Armalyte* is for the hardened gamer who relishes the 'one more go' approach that mastery of this game demands.



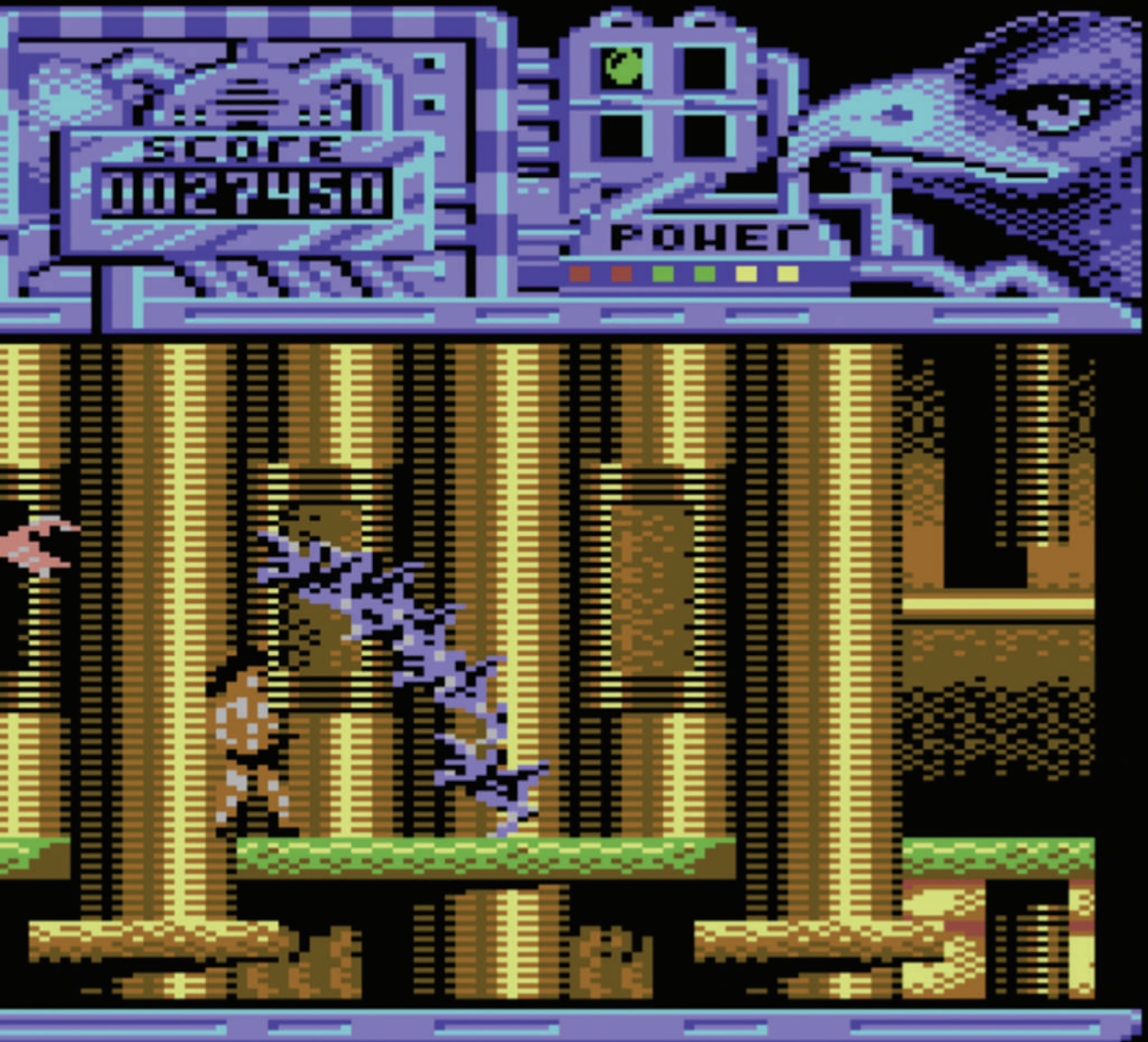


Name : Hawkeye  
 Year : 1988  
 Publisher : Thalamus  
 Author : Mario van Zeist,  
 Jacco Van 't Riet,  
 Arthur Van Jole,  
 Robin Levy, Jeroen Tel



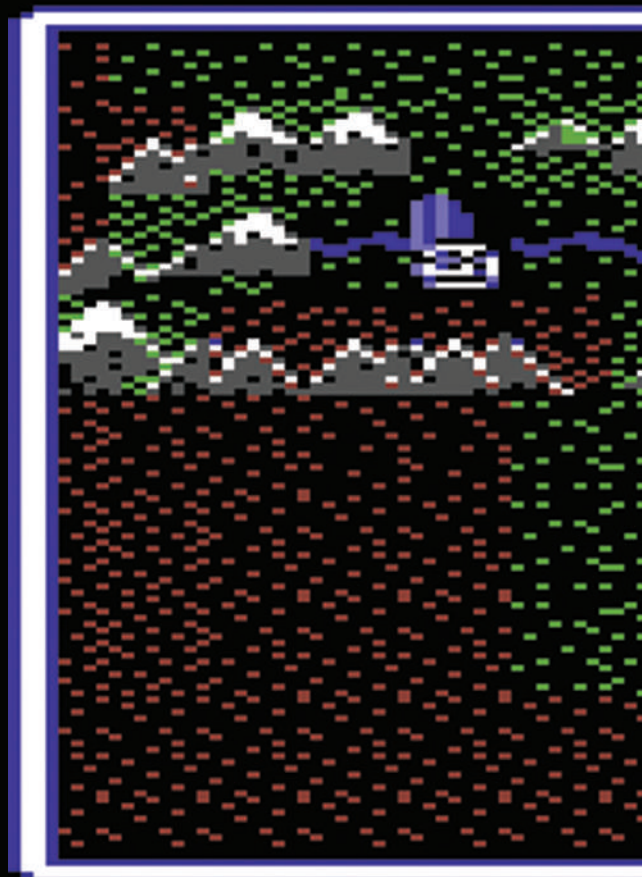


**H***awkeye* impresses immediately with a 'talking' alien head that relates the background story of the game - your race has been slaughtered and confined underground by a highly aggressive nation - these nasty guys now fill your own world with radiation. Your only hope is to control an SLF (Synthetic Life Form) and battle through glorious parallax scrolling levels filled with an array of dangerous foe. The aim to collect the four puzzle pieces on each level to go to the next, eventually rid the world of the toxins, making it habitable again. Nice touches like the hawk's eyes at the top of the status panel flashing to give hints on which way to go and the SLF recharging while the next level is loading add to make this game stand head and shoulders above the competition. The Jeroen Tel tracks add greatly to the atmosphere and combined with the graphics and slick presentation make this sometimes repetitive shooter shine bright.



# ELECTRONIC ARTS™

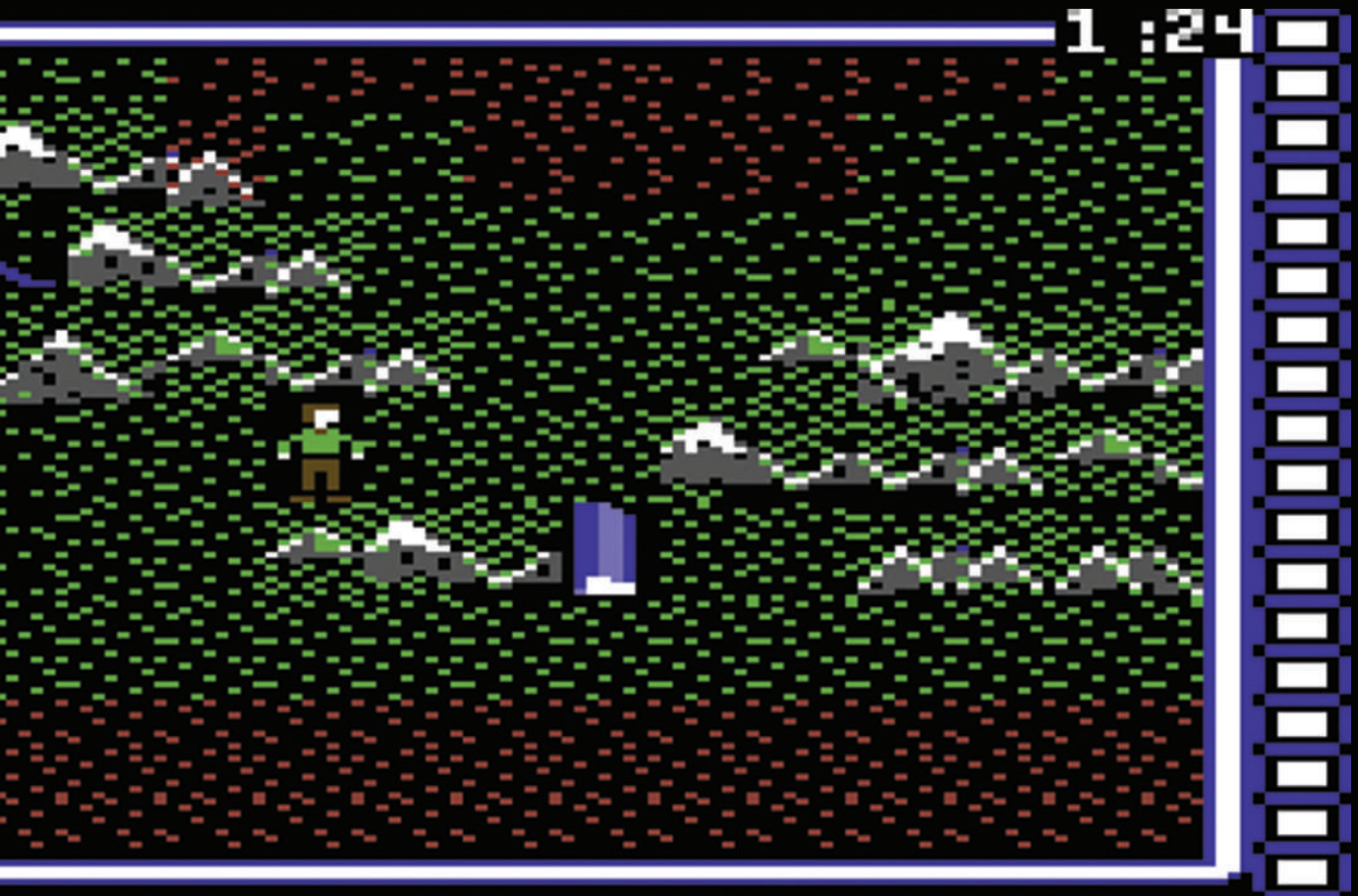
Name : Wasteland  
 Year : 1988  
 Publisher : Electronic Arts  
 Author : Alan Pavlish



Use Enc Order



Role-playing games usually featured wizards and dragons, so the sci-fi setting of Interplay's *Wasteland* was a welcome change. After the fallout of a nuclear war in 2087, a party of Desert Rangers explores the deserts of southwest America. Each party member can learn new skills (including lock picking and bandaging wounds) and become proficient in particular weapons. The game uses a system similar to *The Bard's Tale*, showing a close-up of enemies encountered as well as new overhead maps. To add to the atmosphere, the manual contains extra paragraphs of text that the game refers the player to during play (also acting as a piracy deterrent). The plot sees the Rangers visit Las Vegas, recruit extra party members and then take on a threat to the surviving humans. While there was never a C64 sequel, the PC RPG *Fallout* was heavily inspired by *Wasteland* and spawned a successful series. In 2014 the original team released *Wasteland 2*, the official sequel funded by Kickstarter fans.

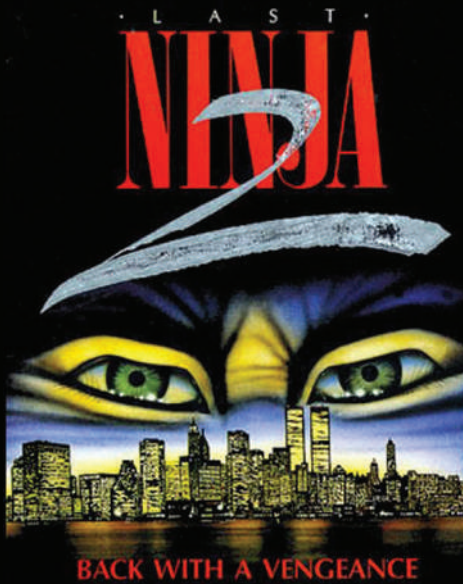


Disband View Save Radio





Name : Last Ninja 2  
 Year : 1988  
 Publisher : System 3  
 Author : John Twiddy, Hugh Riley,  
 Matt Gray

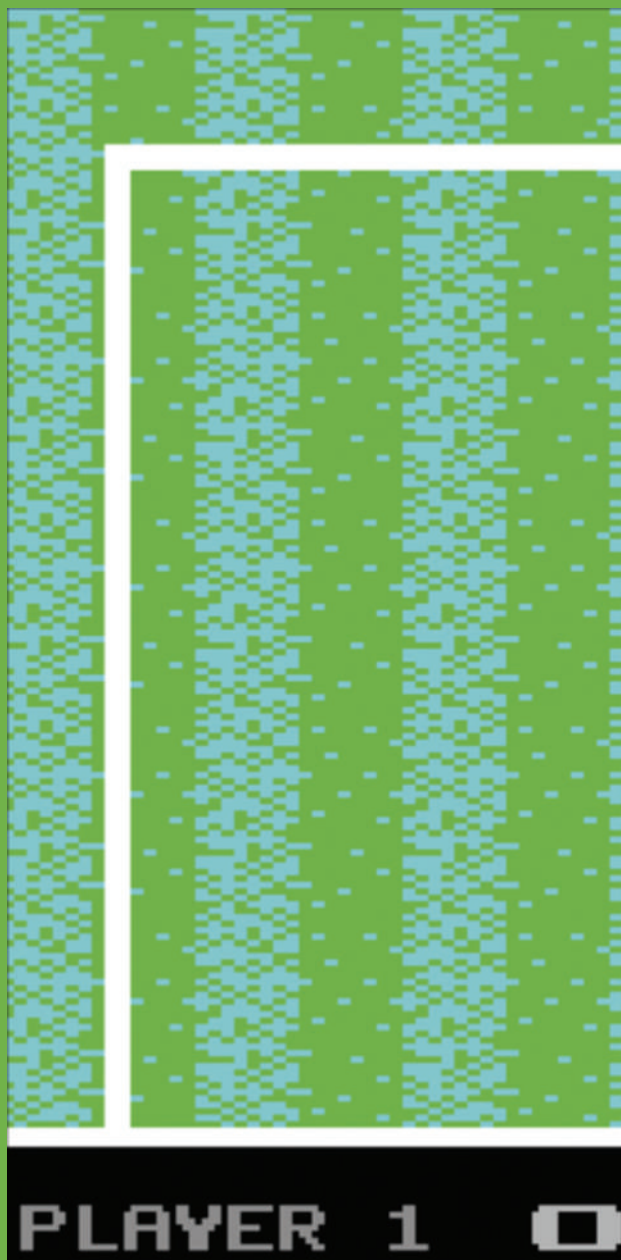
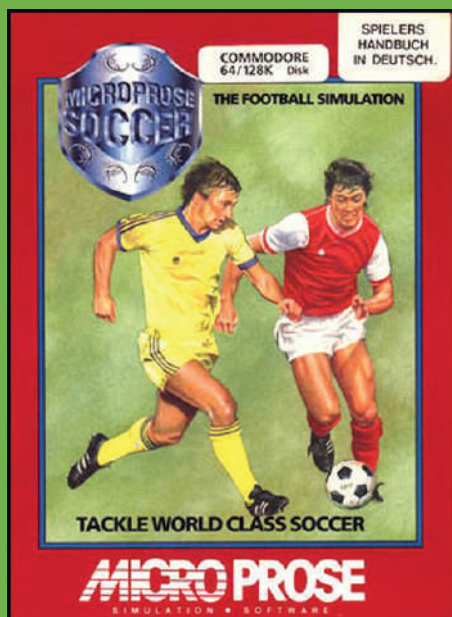


In *Last Ninja 2*, our ninja hero Armakuni is taken across time and space to face his greatest nemesis in New York City, the evil shogun Kunitoki. *Last Ninja 2* is technically more accomplished than its predecessor and features arguably the best tunes pumped out of the SID chip to this very day, composed by Matt Gray. Even though one might not want to see the ancient legend of ninjas taking place in modern times, the backgrounds are stunningly detailed, with lots of animated hazards. The life-like moves of Armakuni ensure he runs around the pseudo-3D environment with grace though it has to be said the controls do sometimes get in the way of the action. The puzzles are also a step up from the original, though some do seem a little unfair, like the 'choose a door in the sewers' part where the wrong choice will unfortunately kill you. On the other hand, you don't have to worry about those damn stone-hopping rivers from the previous game.



# MICRO PROSE

Name : Microprose Soccer  
Year : 1988  
Publisher : Microprose  
Author : Chris Yates, Jon Hare,  
Martin Galway



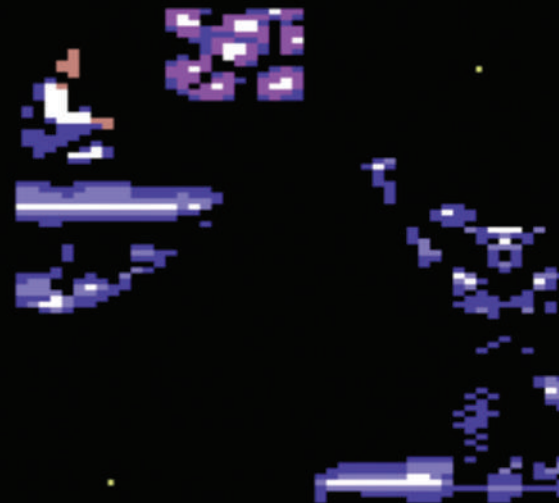
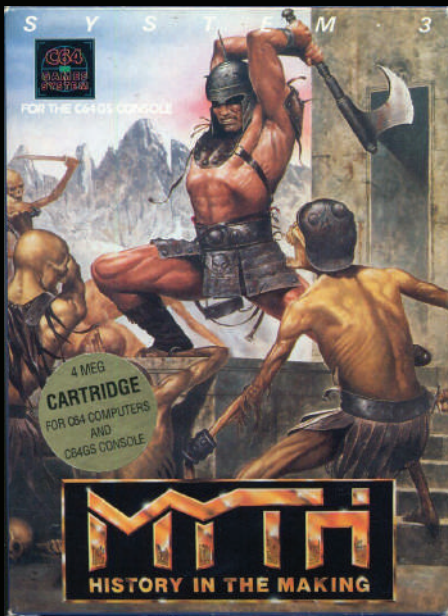


There are seconds left on the clock. England are attacking on a wet and slippery pitch. The German defender tries a sliding tackle and goes slipping past the attacker. The player shoots, adding aftertouch to bend the ball past the diving goalkeeper. It hits the back of the net and the players celebrate. The video rewinds and shows an action replay of the goal going in. *Microprose Soccer* is full of exciting moments like that, whether taking on the computer or a human player. Sensible Software were inspired by an arcade game to create this playable football simulation, and ultimately it led to the creation of 16-bit classic *Sensible Soccer*. With the 11-a-side outdoor game and the fast-paced six-a-side indoor game, tournaments and a single player challenge, there is plenty of depth. The overhead view uses detailed sprites, Martin Galway supplied great music and sounds, and the gameplay is fast and furious. A brilliantly presented game, best enjoyed against another player.

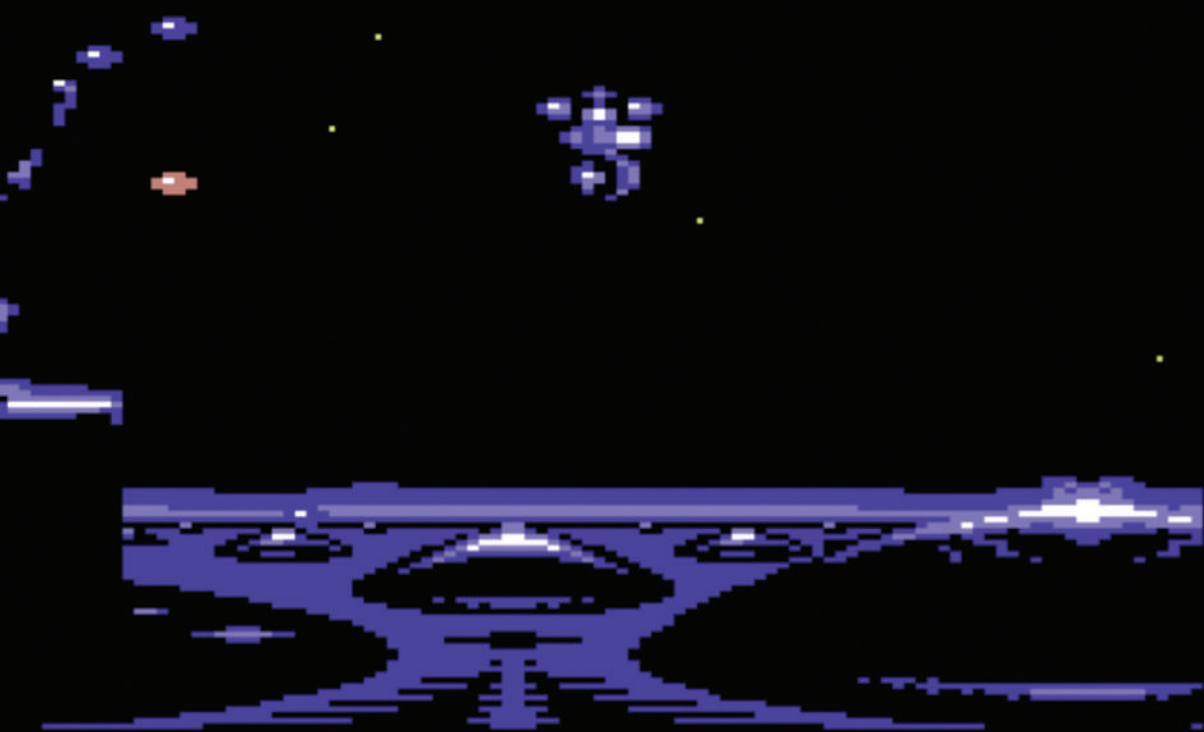




Name : Myth  
 Year : 1989  
 Publisher : System 3  
 Author : Bob Stevenson, Jeroen Tel



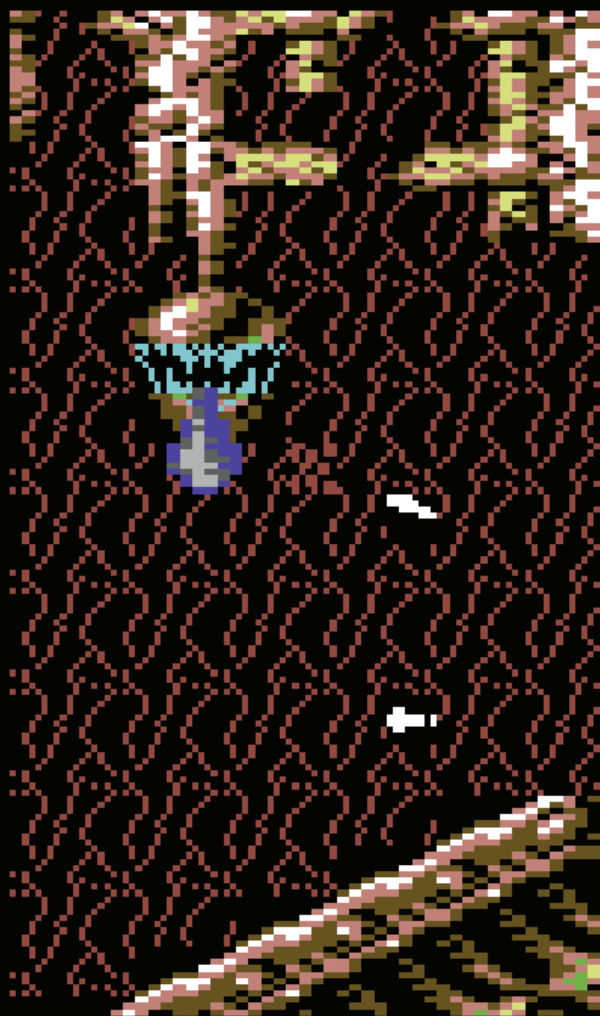
This System 3 game was based around ancient myth – although we find the hero in blue jeans! Rotoscoping techniques were used to make his movements life-like. Drawn from the future, he must fight through Ancient Greek, Viking and Egyptian pyramid settings, before taking on the evil Dameron in a horizontally scrolling shoot ‘em up. Graphics throughout are highly detailed and well animated, with superb music by the Maniacs of Noise accompanied by some well-made sound FX. A standout moment to watch out for is the fight on a longboat, lit only by flashes of lightning. There are also many basic puzzles to work out – how to defeat Medusa, or forge a stronger sword to name but two. From the three-headed Hydra to Norse gods and into Hell, there are also some impressive boss fights to win in *Myth*. With a lot packed into the control method it can take some getting used to but it makes for an agile hero ready for the challenge.



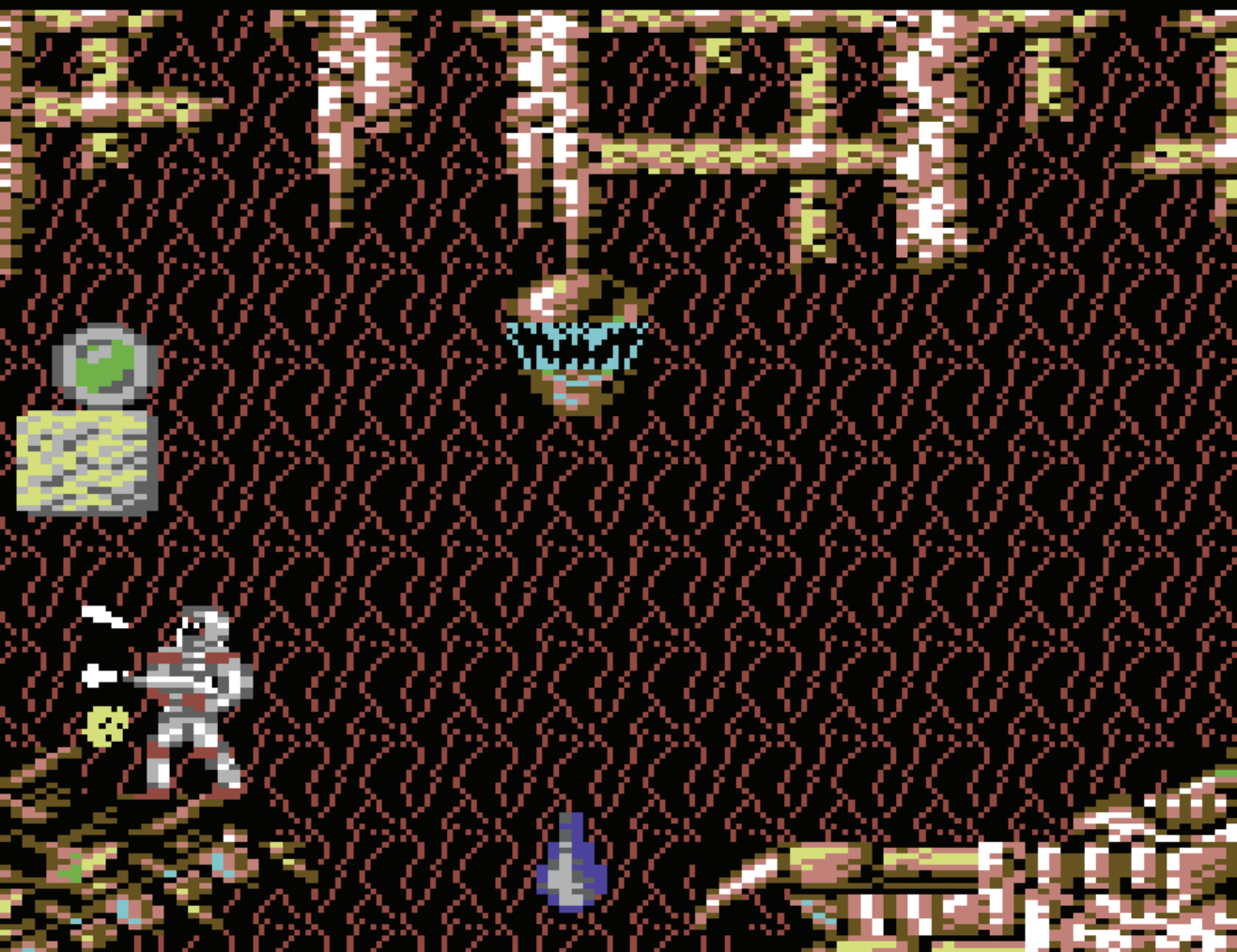




Name : Turrigan  
 Year : 1990  
 Publisher : Rainbow Arts  
 Author : Manfred Trenz,  
 Chris Huelsbeck



Manfred Trenz deservedly made a name for himself in shoot 'em up circles through his *Turrican* series. Partially inspired by the *Metroid* series and *Psycho-Nics Oscar*, *Turrican* is a massive arcade platform adventure shooter that puts the player in the shoes of a bio-engineered soldier wearing the eponymous Turrican suit. While it would later be eclipsed by its own sequel, the original game still remains one of the finest to grace the Commodore 64, in no small part due to the well-animated characters traversing a diverse and beautiful alien landscape and fighting enemies with a nice selection of weaponry. The stages are amazingly large, with lots of secret areas to discover and large bosses to fight, greatly helped by Trenz's trademark mixture of graphic modes that gives his games a stylistically chaotic look that never fails to impress. *Turrican* is a classic, arguably beating everything that came before it in the genre – and many that came after.



# COSMOS DESIGNS

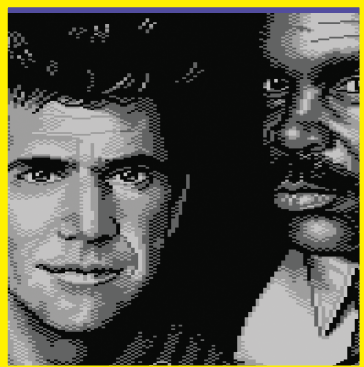
Name : Cosmox  
Year : 1994  
Publisher : CP-Verlag  
Author : Cosmos Designs





In this original arcade platformer by Cosmos Designs you slip into the role of Fred and your mission is to reduce ever-growing towers. Difficulty factors are the time limit, a height level objective as well as Fred's decreasing vitality level shown by his facial expression and colour. You can make Fred jump across the towers and also stomp particular towers down – as long as he doesn't fall off, reducing the available lives. By wiggling the joystick left and right you can also make a tower grow – but this adds additional stress to Fred's vitality. In each level you can catch extras like power pills that recover Fred's energy. For some levels this is a crucial tactic. Certain point scores grant you extra lives. *Cosmos* unites a unique game concept with colourful comic-style graphics, funky music/SFX and a good difficulty curve. All of this is topped off with an appealing ending. Arcade at its finest! **Arnold Bluemi**





## Steven Day

STE'86 was Steve's calling card back in the Compunet days, where he posted many of his Commodore 64 created images for all to see - ultimately leading to some commercial work for Codemasters.

I began my association with the Commodore 64 in 1985 while at art college, where I was following the usual graphic design career path of 'A' Levels followed by art college and then on to Uni to a design degree, none of which you must remember were digital at this time.

Half way through my foundation course in January 1986 came the life changing day, when a friend of mine gave me a copy of *KoalaPainter* which had been hacked to make it work with a joystick, rather than the expensive pad, and suggested that I had a go at doing some artwork on the C64. I had been aware of the work of Bob Stevenson, Mat Sneape, Tony Crowther and others from Compunet since the latter part of 1985, so I knew what was out there in the UK and decided to have a go. I was totally blown away by this new media, the colour, no mess, no clean ups after work and the ability to experiment and undo when it went wrong. By the time the end of the college year came around and I got sent holiday work to begin my next stage of higher education, I realised

at that time I no longer wanted to pursue a mainstream graphics career.

I think a major draw was the fact it was all brand new, you could see people no more talented than yourself making money from it, and no one could tell you 'you did that wrong' because everyone was making it up as they went along. Personally I always think of the 80s gaming industry as analogous to the 60's music industry, lots of very talented people writing their own rules, having a blast and getting paid for it. Before the 'big businesses' ended it all.

The very first image I drew was a rendition of Johnny Alpha from the 2000 AD comic strip 'Strontium Dog' drawn by Carlos Ezquerra, sadly now lost it seems. 2000 AD inspired art was a big part of both my own, and indeed many of the other UK C64 artists portfolios at that time. After doing about 5-6 pieces, I bought a KoalaPad which was £90 then, and a multitude of movie and game artwork subjects followed in 1986. One of the favourite subjects was the artwork of the ubiquitous Bob Wakelin. Kudos was to be had converting Bob's art to the



*Super Stunt Man*,  
released in 1987  
by Codemasters.



*ATV* released in 1987  
by Codemasters.





*Ghosthunters*, released in 1987 by Codemasters.

Look to get a 147 break in *Professional Snooker*, released in 1988 by Codemasters.



C64, because while the cover art was of an exceptionally high standard, generally the in house Ocean renditions of it on the C64 loading screens were very poor quality until the late 80s. The same however, cannot be said for the Spectrum loading screens. The first computer artist I recall admiring was not a C64 artist at all, but David (F.D.) Thorpe, who did the Ocean loading screens on the Spectrum for several years from the mid to late 80s. I considered that if I did at least as good a job of any Ocean inspired art on the C64 as he did on the Speccy then I had succeeded in my goal.

Joining the Compunet service was undoubtedly an advantageous move. Compunet was a unique network at the time, which allowed those of us in the UK aspiring to work in the games industry between the mid to late 80s to showcase our talent in graphics, coding and music. I have no doubt it helped boost the careers of the UK artists, and it is no coincidence that the majority of well known C64 artists like Bob Stevenson and Paul Docherty were active



on Compunet, and even those that didn't actively participate like Steve Thomson and Robin Levy had their art uploaded on there by others. Of course it certainly didn't hurt that the Zzap! 64 team were enthusiastic Compunet users and published art from there in the magazine each month.

Cnet, as the users termed it, fostered an atmosphere of friendly rivalry between the artists competing for Zzap! 64 page space or industry commissions, and let you talk in chat to fellow artists about techniques and work practices. My Codies screen *Ghost Hunters* people have commented, bears more than a

Take to the dirt track in *Super BMX Simulator*.



passing resemblance to the style of Paul 'Dokk' Docherty, and my Lethal Weapon artwork was done in direct response to the stunning greyscale art of Steve 'SIT' Thomson which suddenly popped up on there out of the

*Lunari*, released in 1988 by Reaktor Software.

Two of Steve's latest loading screens for homebrew versions of *Commando* (right) and *Ghosts'n Goblins* (below).

blue in '87.

My first commercial screen commission was *Professional Snooker Simulator* for Codemasters, which was ironic really as I loathed snooker because in the 80s it was on TV constantly.

It came about in the time honoured manner of banging out art demo disks to various companies and I got paid £100 for it, I was 19 at the time. I always based a loading screen on 8-10 hours work for £100. Any more time taken over 10 hours reduced the commercial viability of a screen. Fortunately I was always pretty fast. I remember David Darling asking that the screen should not be a direct rendering of the box art, as they weren't overly happy with it. So I borrowed some snooker mags for reference and did the image based on a photograph of Welsh snooker player Doug Mountjoy. I sent it



back recorded delivery next day and an association lasting several years began.

People often ask me what the STE'86 sig is all about, well it began simply as my name and a date. As a bit of associated trivia, the internet's C64 database CSDB credits me with being the most prolific of any of the Commodore bitmap artists worldwide in the year 1986. So when 1987 rolled around, my first image of the year 'The Hero is Back', was dated STE'87. Now when the same friend who initially got me into this saw it, he was strongly against changing the sig because he felt it had become a well known 'brand' in its own right so the '86 stayed. It did actually help to differentiate my art from the several other Stes and Steves doing C64 art in those days (Pickford, Wahid, Robertson, Thomson etc).

The commercial screens all just say STE, because Codies asked me not to date the screen in any form so the game wasn't immediately obvious on loading how old the game was. I took this on board and could see the commercial







Two more sporting loading screens for releases from Codemasters, *The Race Against Time* (above) and *Professional Skateboard Simulator* (left).

To the right, Steve's tribute to The Karate Kid and below to Judge Dredd.

point, so no paid for art was ever dated.

Sadly, the C64 was over and done for me, except for brief forays, by about 1991. I had been doing 16-bit since 1987 when I bought an ST, for a couple of years they were concurrent but then as most of the industry did, I slowly stopped taking on C64 projects. Then in around 1994 the bottom dropped out of the Amiga market, and after a brief flirtation with the PC it became obvious with CD's and full motion video that the days of the small group developers were over and I would have to go and work in-house. This didn't appeal, not least because the people I knew in the industry were being forced to go where the work was and seemed to be migrating around the country like herds of cattle.

So, I bit the bullet, went back to



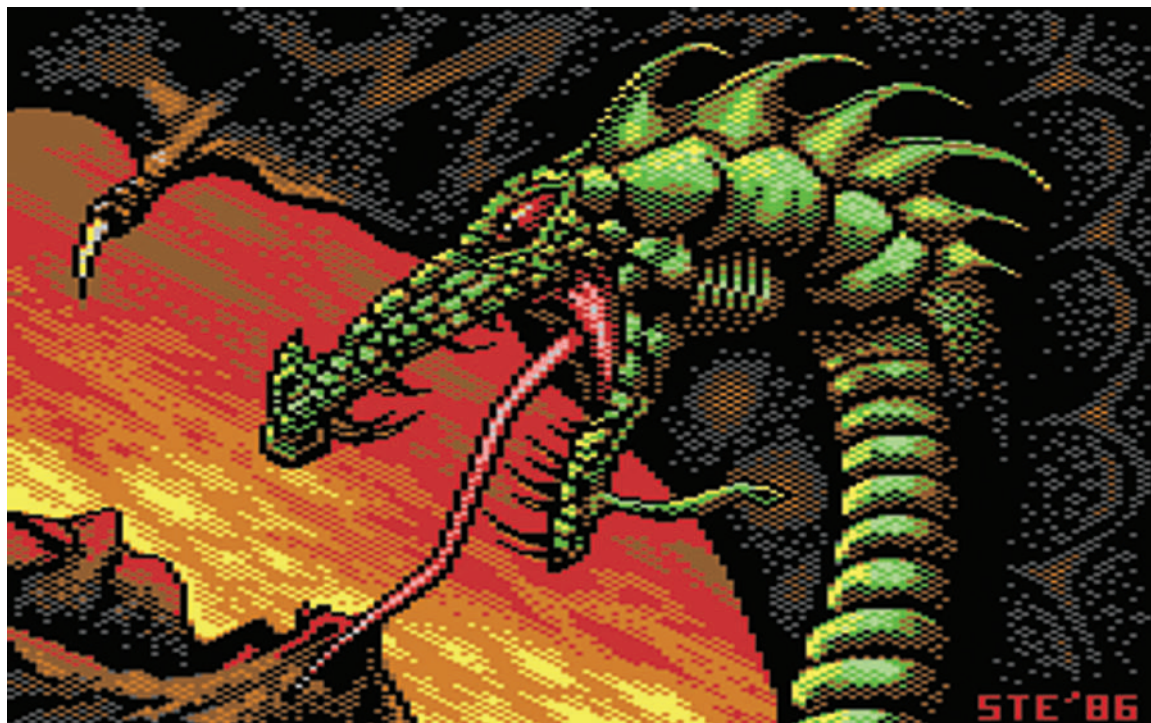
college to do a few refreshers in general graphic design, which had by then also become digital, and got myself a job in advertising. Which is what I have been doing for my sins ever since the late 90s.

Fast forward to 2010 and after nearly a decade of declining any involvement with retro projects, I get talked into looking at producing graphics for the 8-bit Atari machines which have similar pixel resolutions to the C64, using a stripped down Photoshop CS2 as the app. As I am working, it occurs to me that this same method can be used to produce C64 graphics too and I begin

to produce static art for the C64 again for the first time in 25 years. Since then I have been involved with the graphical production of several C64 homebrew games including *Prince of Persia*, *Donkey Kong Jr* with two of the latest being reboots of Capcom/Elite's *Commando* Arcade and *Ghosts 'n Goblins* Arcade in conjunction with the C64 retro group 'Nostalgia'.







Stallone as Cobra  
above and a fantasy  
dragon theme below.



Cover of  
Zzap! 64  
issue 8 - art  
by Oliver  
Frey.







# THE MEMOIRS



## Simon Butler

Simon spent many a year at the famous software house, Ocean Software, producing the graphics for some of their classic and well known titles - who can forget the detailed lovely art in *The Never Ending Story*.

While I have never been one of those who ever claimed that one machine was in any way better than another, I always saw the C64 as being the 'American' machine compared to the intrinsically British Spectrum.

That aside, the 64 was the first machine I developed graphics on once I set foot into the game industry as a real career. Steve Cain asked me to join Denton Designs on their less-than-stellar licensed title *Transformers*. Thinking it would be another short-term contract to tide me over prior to returning to advertising I agreed.

Little did I know that I would be sat 33 years later looking back at a very colourful, somewhat chequered but exceptionally

entertaining career in game development.

Upon joining the 'jolly Dents' as they were known at the time I then had the rather dubious pleasure of attempting to render Optimus Prime in all his magnificence out of the shoebox-shaped pixels that were the 64's graphical speciality.

I shan't lie and say that I was successful but it did teach me a few valuable lessons; firstly that this strange 'job' of making computer games was more challenging than it seemed and secondly that giant robots couldn't be done justice in 16 x16 sprites.

The latter point was somewhat obvious but it never stopped the magazines from

burning us verbally at the stake for our efforts. One needed to approach the C64 with more than a little caution and think your way around certain graphical issues before just leaping headlong into things.



*The NeverEnding Story*: released in 1985 by Ocean Software to coincide with the film of the same name.



The C64 certainly had more colours and it warbled rather jolly little tunes but I must admit that I did struggle somewhat with the rectangular side of things at first.

It seemed less prone to driving you bonkers by deciding to just lose an hour's work for the hell of it which was one of the less appealing character traits of the Speccy. It seemed faster when saving and/or loading and as previously mentioned it could knock out some cracking tunes when the right person put their mind to it.

It was a whopping great beast however and took up an inordinate amount of space on my desk, which doesn't sound too bad in itself, but when you consider that back then, I would have at least two machines and two (if not three) old-style-steam-driven televisions sat there, then you see my concern.

I remember playing a lot of games on the 64 and while the vast majority of them have faded with the years one or two stand out and in my opinion, rightly so.

*Uridium, Parodroid, Impossible Mission, Bubble Bobble, Bruce Lee, Lords of Midnight, Stunt Car Racer...* the list goes on and on.

What a time it was for game developers and game players. They were crazy, halcyon days filled with imaginative, passionate people and true creativity.

I never for a second thought that three decades later



I would be making new friends from the retro scene who liked some of the things I did way back and who were bewilderingly passionate and tribal about this odd machine from the mists of time.

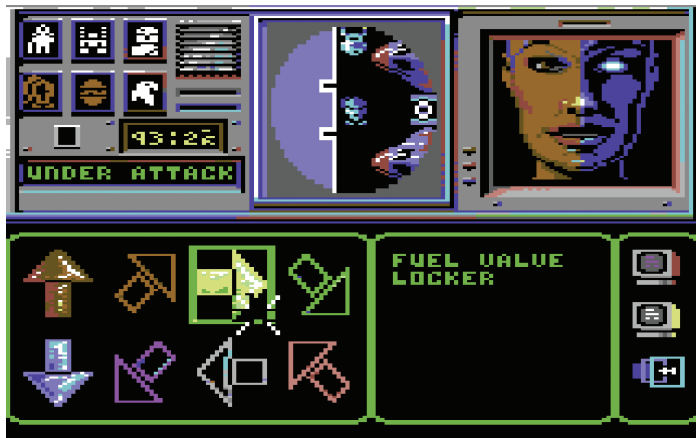
It was the first machine I was put onto when I started at Ocean and was the only one I worked on during my first stint in the basements at Central Street.

It was the last 8-bit machine I developed for prior to starting work on the 16-bit machines and while I never reached the dizzying heights of graphical excellence reached by the likes of Steven 'Jolly' Thomson I was not always ashamed of my achievements.

The famous for all the wrong reasons, *Highlander*.



Simon produced the loading screen and in-game graphics for *Combat School*, published by Ocean Software in 1987.



*Shadowfire*: released in 1985 by Beyond, graphics by Steve Cain and character design by Simon.

I have very fond memories of the C64. I can't remember what game I saw first, but for me it will always bring to mind *Shadowfire* and the nights I sat behind Steve Cain while he worked on the graphics at home and then there is always the awesome theme tune by the genius that is Fred Gray.

Put those fond memories alongside me almost needing clean underwear when encountering the spiders in *Scarabaeus* for the first time and that's enough to put the beige and plastic beastie in the hall of fame.

I see today what fans of the C64 are accomplishing on both the code and graphical side of things and can only be amazed.

It baffles me that we never tried to push the envelope as much, but maybe we just didn't have the time due to spending our creative lives under the ever present shadow of the always approaching deadlines.

*Mag Max*: an Imagine Software published game in 1987.



I have discussed the possibility of doing maybe one last title with several of the retro-scene aficionados. Who knows?

Perhaps the shoebox shaped pixels won't be as daunting this time and I can finally achieve something to be truly proud of unencumbered by franchise or schedules.

Regardless of whether my involvement with the C64 is due for a renaissance or not I can only doff my hat to it and thank it for testing my skills and hopefully honing them somewhat.

The lessons I learned sat before it have stood me in good stead over the last three decades. I sat alongside many a great coder and had experiences that will stay with me until they throw me out for the cats to play with.

The world of game development has changed, but the C64 will always hold fond and fantastic memories for me.


A truly great machine.





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## Chuck Sommerville

Chuck's name is synonymous with the classic titles released by Epyx, specifically their *Games* titles on the Commodore 64.

Scott Nelson was an amazing engineer and really did help carry Epyx for a while with his Fast Load cartridge for the C64 when the company was struggling. It was such a popular product and he put a lot of work into it. He also helped develop the 'Vorpal Loader' which was the next generation fast loader. The 'Vorpal Loader' used a custom format on the disk such that we had to modify Commodore 1541 disk drives to add additional RAM – inside the disk drive was also a 6502 processor much like in the C64 – we beefed the drives up with additional RAM because for the 'Vorpal Loader' to work we had to read a complete track in one revolution without stopping.

In order to do that you had to have enough RAM to read an entire rotation of the disk instead of just part of it. What this allowed us to do was put a lot more data onto a track than you could with an unmodified drive, and also read the data off of it without having to wait for the next sector to come around, basically read the track as it was spinning one continuous sector and then send it off to the C64 with one rotation. It was a factor of five faster than even Fast Load could do. We could load all of the Commodore 64's 64K of memory in like 4-5 seconds. It proved to be a great disk copy protection system.

Scott was also instrumental in helping to develop the *Games* series at Epyx. Scott

and Steve Landrum were part of a team of programmers from a company called Starpath who were well known for developing a piece of hardware for the Atari 2600 called the Super Charger – a device that allowed games to be loaded into

Chuck programmed the skateboarding event in *California Games*.

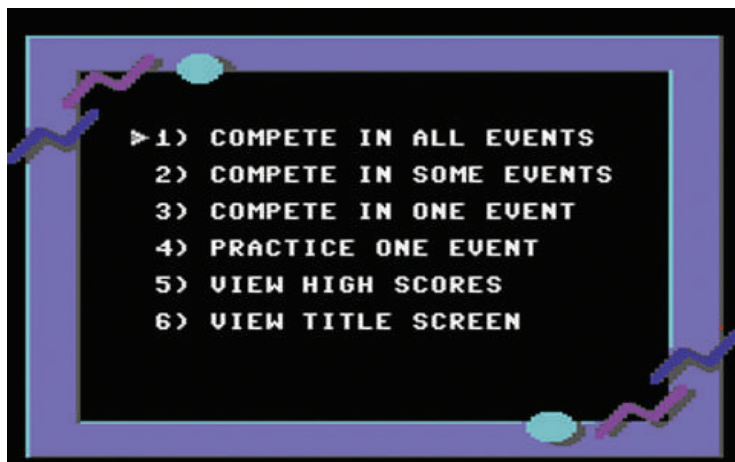


the 2600 from cassette tape.

When I joined Epyx, I was more an Apple II expert so my first work was a port of the Apple II version of *Summer Games*. I had just one other programmer working on it with me – there were six that worked on the C64 original! It was an interesting project because the game was optimised for C64 sprite hardware and proved to be a much more capable machine than the Apple II. The original C64 team looked at the work I did on the Apple II version of their game and I was accepted into their inner circle. They embraced me as a worthy programmer – I had passed the test.

The first of the Games series I worked on, on the Commodore 64, was *Summer Games 2*. In total I worked on *California Games*, *Summer Games 2*, *Winter Games 2* and *The Games Summer Edition* whilst at Epyx. The C64 was the main platform for released games and we brought in contractors to do the conversions.

The *Games* series all followed the same approach. There was a program called the MCP (Master Control Program) that was



a menu the player could select their chosen event from. The event would load allowing the player(s) to play – when the event was over the game would return to the MCP that would keep track of each players score – each of the events was a separate program that was run. The rule was not to write to a certain part of the memory where the scores were stored or they would be written over.

The MCP in *California Games*.

We used the Apple II computers to develop the games. There were no really good assemblers on the Commodore 64 so we used the Apple's for our editors and our assemblers and we had a beefed up RAM

drive so we did not have to go out to disk – like a modern computer with lots of RAM. In the early days we had special hardware, developed by Epyx that linked the Apple's to the C64 so we could download and run the code on the C64. Later on we got more sophisticated – we

Chuck programmed the luge event in *The Games: Winter Edition*.





*Destroyer*, the game Chuck coded between the *Games* series.

had a piece of hardware that plugged into the C64 replacing the processor so we could then completely manipulate the C64 memory putting in breakpoints etc. and recording what the processor was doing at the time – great for debugging and optimising.

The C64 was a popular machine to develop on and was more powerful than the Apple II. You could do sprites – that is you could move an object around the screen without it interfering with the background and not using a lot of CPU

power. You did have to use lots of tricks to get ‘many’ sprites on the screen but at least you did not have to draw them in. You had 16 colours that the 64’s video chip could produce and were hard set – thus a lot of games looked similar with the colour palette.

Chuck at his workstation at Epyx.



For sound on the original Apple II you could turn the speaker on and off and if you did it fast enough you could get a tone out of it. The Commodore 64 had its own chip and could produce four different frequencies at the same time. You would tell the chip to make this note, this note and that note and the SID chip would do it for you without any interactions with the processor. It was amazing! We had musicians in-house writing tunes for the games with bespoke sound tools developed for it.

The *Games* series was spread out over a number of years. I was at the company in total for seven and worked on other titles in between those. One was a naval destroyer simulator, aptly called *Destroyer*. Then towards the end of my time at Epyx, they started a project to design a handheld that ultimately became the Atari Lynx. Epyx was developing this mainly for their own games but ran out of money so sold to Atari.



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## Tim Chaney

Stumbling into Commodore, Tim had the job of selling the Commodore range of machines, including the C64, to the retail shops in the high street - he finally left Commodore to join US Gold.

I first heard about Commodore from an advert in 'The Grocer'. The magazine was the destination for jobs, usually sales jobs in 'Fast Moving Consumer Goods'. The fact that that was where Commodore went for salesmen, and avoided the tech based job paper spoke volumes to the attitude of Jack Tramiel and the company. I was selling car chemicals at the time and couldn't see the uplift from that to selling computers, not knowing what one was if I trod on one. Weren't they huge things that took up the side of a wall? I applied for the job anyway as it had a Ford Cortina as a company car and it was paying nearly double what I was earning then. I was invited to an

interview at The Spiders Web hotel (now Mercure London Watford Hotel) on Watford Way. I waited my turn to meet Paul Welch, Commodore Sales Director. It wasn't a good interview: Paul was critical of my CV, wondered why I was there for the job and wasn't sure if I knew one end of a computer from another! I thought 'sod that' so I gave back as good as I got and argued the toss on every point he made and left the interview under a dark cloud. I forgot the job as soon as I got into my car.

A couple of weeks later I received a call at home.

"This is Paul Welch."

"Who?"

"Paul Welch - I interviewed you for the Regional Sales Manager Job at Commodore."

"Oh yea."

"Well, I want to offer you the job."

"What? It was a terrible interview.

You didn't have one nice thing to say about me. I'd forgotten all about it."

"Ah, all my interviews are like that but YOU answered back and fought your corner - nine out of ten don't. So - that's

The first computer Tim sold at Commodore - the VIC-20.



why I want you in the job not the other nine."

I bought a couple of magazines to see what a VIC-20 looked like and a week or so later I was turning up at the Commodore offices in Ajax Avenue, Slough (featured in the opening shot of 'The Office').

This was January 1982. Within a year, the first C64s arrived in the warehouse.

My residual memory of those early Commodore days is how hard we were. How extreme our winning mentality based around Jack Tramiel's ten point Commodore Code was, which started with 'Business is War' followed by 'We don't have competitors, they are enemies'. I can honestly say, I was a driven spirit from dawn to dusk trying to shove VIC-20 first and then the C64 into anywhere I could.

In those early days of selling computers at Boots, Rumbelows, toy shops and the rest we spent a lot of time and money training retail staff to



turn them on and do the most basic four-line code to get something moving on the screen. We would get a location with about 50 desks with staff from the high street (I seem to recall Curry's staff drew the short straw), each with an unpacked VIC-20

Tim sold C64's to many of the high street retail stores - training them to use and sell the machines was a challenge.



or C64 and we would start by opening the box, explaining the contents and then hooking them up to a TV. Time now to teach them a bit of coding, in BASIC, which inevitably led to people getting stuck. The solution then is the same 30 years later.

Pull the plug out and start again.

The C64 was launched as a home office/leisure computer. We had done the same with the





VIC but it was soon clear that its home use was primarily games. The marketing at Commodore was led by John Baxter and Aileen Bradley. John was a workaholic and always seemed to be at his desk. As early games, home-grown and from the US, started to be released it became pretty clear that the battle royal would be fought against the Sinclair Spectrum, and the arena would be games.

Meanwhile, our attitude to retail customers didn't abate. There was a feeling at the very top that this market – home computers – wasn't going to have longevity and anyway not with these machines and what came next was always the bright new thing even if some were dull as dishwater like the Commodore Plus/4, which we couldn't even give away, or the C128. But the imminent Amiga was different.

This attitude of 'it won't last' made us give no quarter with retailers and wholesalers alike. We were not arrogant or objectionable – just hard. Any favour we did the retailer

had to come at a high price to them. I was personally sued by a retailer in Greenford for selling him too much stuff and was party to a lawsuit from Boots. I felt for the small retailer. We had a starter order that a retailer had to buy to become a stockist – in addition to the things he/she could sell was all stuff we couldn't, mainly our selection of our cartridge based games. When the letter from the Greenford retailer's lawyer arrived I met with Paul Welch.

"Paul – this is a small guy and he gave it his best."

"And. What do you want us to do?"

"I dunno – show some goodwill."

"Tim – when we want to show goodwill we will f\*\*\*ing buy it!"

Paul was the greatest salesman I had ever witnessed up to that point. And if I was a decent salesman going in, I was ten times better by the time I left. Face to face with customers he was less aggressive and always found an amicable way out, even with Commodore giving in. That's why I wanted to get up the ladder to Sales

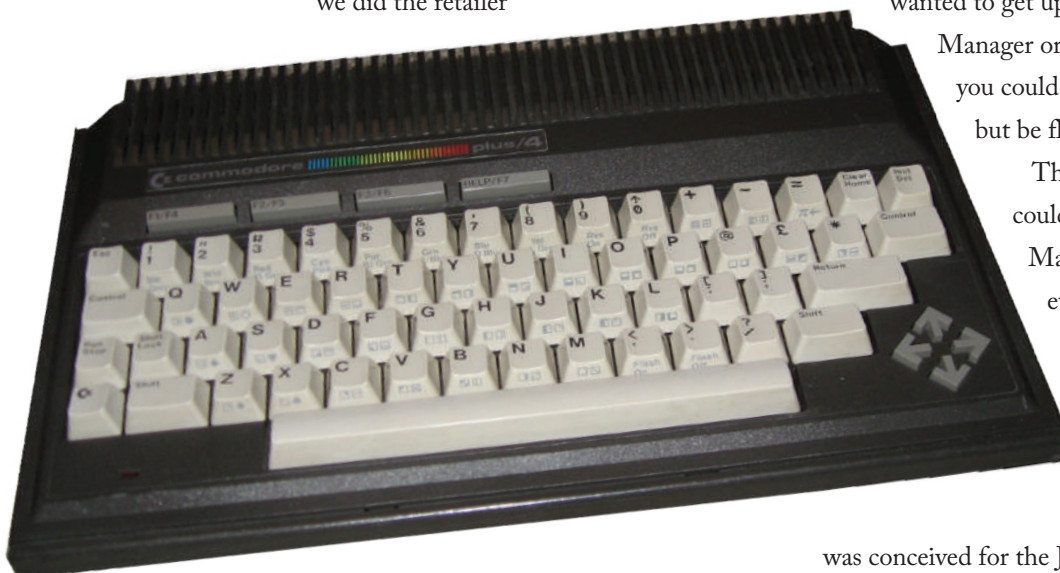
Manager or Sales Director – you could tell others 'no way' but be flexible yourself.

The retailer that we couldn't break into was Marks & Spencer but even they couldn't totally ignore us.

The Commodore MAX was a console version of a VIC-20 that

was conceived for the Japanese market. The

The not so popular Commodore Plus/4.



project was cancelled but some machines were made and this was reworked into the M&S Home Computer. They didn't fancy it much and it didn't go anywhere.

The Slough office was run by Bob Gleadow. Like Paul he was from the North East. Everyone, and I bet Paul at times, was afraid of Bob and he was to be avoided. Paul hated seeing salesmen (there were four of us Regional Sales Managers) in the office. Bob hated it more and unlike Paul who could get hot under the collar and be sarcastic, Bob would sneer and then put you down in full view of anyone in range

"Aren't you meant to be selling?"

"I know but I had to pop in for some samples."

"Do you have them?"

"Yes."

"Why are you still f\*\*\*ing here then?"

I was promoted three times in two years and then left to join Computers (who had headhunted me to launch the Lynx 48) and was then called by Paul to come back several months later when Computers couldn't raise the funds to manufacture against the £3m order book we had.



I came back as Software Sales Manager and in this role I met Geoff

and Anne Brown. I was

going to leave to join Lightning

Records

as Sales

Director

(they had

even leased

me the

new Rover

SD1) but at

the 11th hour, the afternoon

I was due to

leave – Commodore

were by now at Corby – Paul

asked me to stay and become National Sales Manager. I rang Loretta Cohen at Lightning and I told her I wouldn't be there on Monday morning after all. She was amazingly nice about it. I eventually left about five months later to join US Gold.

In my mind, the C64 changed everything as it played great games and it was dominant in the US so even greater games came from there. Those were times of the first home hardware arms race and games were the fully leaded fuel.

Had you been writing the future, with Amiga and Atari ST on the blocks you would have said computing power, graphics and speed would win-out. But we weren't watching the Japanese and Nintendo and Sega would come to rule without much in the way of tech at all but with great games.

Tim left Commodore finally to join US Gold - that is a whole other story!



## Matt Gray

With the *Ghostbusters* theme tune blasting out of the C64 as an inspiration, Matt went on to make arguably the best suite of music to grace the SID chip – the tracks found in *Last Ninja 2*.

My computer obsession only manifested itself after I'd seen a ZX81 that my uncle had bought. He was typing in what seemed like endless code from a copy of Sinclair Programs and I was fascinated by this new technology. I was only 11 or 12 at the time, but like so many other kids who caught the home computer bug, I pestered my parents until they could finally afford one and then of course within a year I wanted a Spectrum, and I eventually got a nearly new one for Christmas. Times were hard in the early eighties and whilst my Dad was running a small recording studio from our home, he had a habit of giving away studio time to bands on the dole in return

for song publishing agreements that were never worth the paper they were written on.

It was when I had the Spectrum that I became interested in trying to get it to play music. But the Speccy "BEEP" just wasn't pleasing to the ear at all and then one day, just before the following Christmas I was in a computer shop and they had a Commodore 64 on display with the *Ghostbusters* game title screen on loop. I couldn't believe what was possible on a machine above my much loved Speccy. I simply had to get a C64. But I had to wait almost another year to get one in late '85.

Finally I got my hands on one and it wasn't long before I realised that the thing

I loved most about it was its sound chip. The SID chip was a proper synth. It had three channels of sound that could be modulated almost in any way possible, provided you could code 6502 assembly. Becoming proficient in that language was the only way to emulate the



The *Ghostbusters* music playing on its title screen – an inspiration for Matt.





stunning music I was hearing from Rob Hubbard, Martin Galway, Ben Daglish and Mark Cooksey, etc.

I tried using third party software such as *Electrosound* which was actually OK and I produced some passable demos on it. But it was never going to help me become what I now wanted to be – a C64 games musician. At the time, announcing this to your parents as you were going into your last year of school was like saying you wanted to be a pop star or an actor. There were only a handful of guys in the country doing this professionally and I wanted to join them. I actually went for several interviews with software houses including Domark and Codemasters. David and Richard Darling at Codemasters were particularly helpful in giving me advice and encouragement. They made me realise that without coding as part of my skillset I wouldn't be able to get my music used in commercial games. I remember my mum driving me back from a meeting with them in Leamington Spa and I spent the whole journey convincing her that I needed a 1541 disk drive and an assembler program



otherwise I wouldn't get anywhere.

She found the money somehow and I started to learn the basics of 6502 and started to write out plans and code on paper for what was to become my SID player. But it seemed beyond me initially and after joining Compunet, I came across the *Soundmonitor* software which was great. It was so easy to sequence music on, and there were plenty of good modulation routines to shape the SID sound. It actually sidetracked me a bit though. Producing music on it was preventing me from getting down to some hard work and code learning. Through Compunet I made contact with some like-minded coders and

The first two games Matt created music for - *Yogi* above and *Mean Streak* below.



artists. Corey 'Hex' Kin was a great help as was Graham Hunter and Paul 'Dokk' Docherty. I got noticed by a software house not far from where I lived called Dalali. They asked me to do two games: *Mean Streak* and *Yogi Bear*. But because I didn't have my music



The *Quedex* loading screen by Paul Docherty - Matt provided the loading music and in-game music and SFX.

routine sorted just yet their programmers recoded my music, but didn't do the modulation routines very well or even at all in some cases. Pitch bends suddenly became static notes and vibrato didn't sound good at all. It sounded awful to me, but it kicked me up the arse to get on and finish my routine.

In mid '87 Paul Docherty was doing the loading screenshot for *Quedex*, the new game from Stavros Fasoulas for Thalamus and he played one of my demos to MD Paul Cooper. Paul liked it and asked to use it for the loading music and was I able to do the in game music and SFX as well? I couldn't believe it because up until then they had used my SID hero Rob Hubbard and my first two games had been a bit of a disaster. My music routine was working by now, but the piece they wanted for the loader was a *Soundmonitor* track. Luckily it worked fine whilst the game loaded so they used it as it was, but the in-game music and SFX went

through my player. Stavros and Paul came to my parents house and went through what they wanted with Stavros showing me the game so far on my C64. While I was producing the music in this period, Codemasters asked for a track, but they needed it like tomorrow. So I gave them a demo I had been using to test out my player which ended up being *Fruit Machine Simulator*.

During all this time between '85 and late '87 I had been learning the ropes of SID music production and all the while enjoying the many classic SID tracks others were producing – especially Rob and Martin's soundtracks. I never thought I'd get recognised in the same way those guys were. I was working full time by now as an office clerk in a local import company. At lunchtime when the bosses went out, I'd use the office phone to call Rob Hubbard a couple of times. Someone posted his home number on Compunet which no doubt pissed him off. Anyway he was pretty helpful, though he wouldn't sell his routine. He told me he was upping sticks to work in the States soon which actually led to me getting more offers of work. I was

The *Driller* loading screen - Matt provided the loading music and game sound FX.





finishing off *Driller* for Incentive when I got a call from Mark Cale at System 3. Rob had done the in game music for *Bangkok Knights*, but they needed a loading tune quick. I turned it around within a few days and took it up to play it at their offices in Hampstead in the November. He liked it and asked me to work for them exclusively. My first task was the multi-level follow up to their smash hit game *Last Ninja*.

I was now able to go full time as a C64 musician and I left my office job in January 1988. I earned more money in my first month than I did in six months wages from the office job. In those days we still had bank managers and he often invited me in to chat about ways they could lend me money for my growing business – it was just such a conversation that led to them

loaning me money towards getting my first sampler. Dance music was taking off in the UK and Europe and I was getting hooked on it like many other 19 year olds at the time.

I'd loved the whole C64 experience, especially the music, but I was starting to get a bit bored with the SID sound by now and I must confess I thought the whole home computer games industry was just a passing phase.

So many companies were going out of business, but what was really happening was that the big boys across the water to the west and east were taking over with bigger plans. It seems obvious now in hindsight, but I took a different direction and headed into the record business. But that's another story.

Matt composed each of the musical tracks within *Last Ninja 2*'s levels.





## Chris Abbott

The Back In Time series of CDs and events created an army of SID remix fans that continue to follow Chris and his ongoing projects, paying tribute to the SID chip and the composers who brought it to life.

People tend to forget that C64 remixes are almost as old as C64 tunes, and the first C64 tunes were actually remixes of existing tracks (mostly classical).

My research suggests that the first remixer was Martin Galway: in his heyday, he was so impressed by Rob Hubbard's *Commando* high score tune, he did his own version. Which was promptly lost until it resurfaced on an obscure demo disk last year (and was confirmed to be his).

By the time I started composing SIDs in 1987 (thanks to *Ubik's Music*), there were already a lot of remixes under the bridge: even commercially released ones. It didn't take long after Rob Hubbard's career started before Warner Bros came

a-knocking to sign up *Crazy Comets*.

In 1985, Rob was talking to big name producers... but nothing happened because of legal issues. In a parallel Universe Rob could have been a star like Giorgio Moroder or Harold Faltermeyer.

Mixed up in all the remixing action at the time was Mupados: the people who remixed a number of C64 tunes (by adding extra tracks to a recording of the SID). The resulting tape 'Datahits' was released by WHSmith, and they were so concerned about its saleability to computer fans that they felt there had to be a database program (for cataloguing music) on the back. Although even Rob himself was a little disappointed with the result ("In all honesty it is not very good, but we didn't

spend a lot of time on it."), it stood apart as the first 'real' released synth cover.

Note: In many ways, the current remix scene could not have existed if Warner Bros had succeeded, because everyone would have started paying a lot more attention to the legal status of



*Crazy Comets*: a popular Rob Hubbard track that gained the attention of Warner Bros.



Commodore 64 music. As it is, it was pretty much ignored.

Back on the Commodore 64, people were already remixing tracks from the C64 on the C64 itself: such as Matt Gray's 'Jukebox' series done in *Electrosound*, and Johannes Bjerregaard's 'Comets mix', which was possibly the first true remix, given that it used elements of *Crazy Comets*, and Rob Hubbard's own driver, to create a new piece.

And of course, composers were remixing themselves: for instance, Rob Hubbard with *International Karate+* and *Mega Apocalypse*.

It also didn't take long for C64 remixes (which were mostly ports) to start appearing on the Commodore Amiga. I remember quite a few of them such as *Last V8*: and it's where top games composer Allister Brimble started his career. Indeed, it was the Amiga (and to a lesser extent the ST) that kept SID alive for quite a while, both with MODs of SIDs of varying quality, and later through the seminal '100 Best SIDs' demo that appeared on the Amiga, and which I remember as being the first SID emulation. Of course, it wasn't perfect, but it was there. The culmination of Amiga remixes for me was Jogeir Liljedahl's 'Galway is God' for the upgraded MOD format XM.

But while tunes were being remixed on other platforms, the holy grail of



C64 remixes came to be studio versions. Mupados was almost that, but for years, the leading example was Rob Hubbard's 'Thalamusik' which appeared on a covertape on issue 26 of Zzap! 64. Although even Rob himself was a little disappointed with the result (which was due to lack of equipment and time), it stood apart as the first 'real' released synth cover.

While Thalamusik was the only one I recall released during that time, there were a few people who were already remixing Commodore 64 tunes in their studios or with amateur equipment, me included. The problem was, the record companies weren't interested in the end result, and there was no distribution medium suitable for audio files.

So at this point, what was standing in the way of a remix scene was legal uncertainties, a lack of a viable format for distribution and a lack of distribution channels.

*Last V8*: remixes of Rob Hubbard's track kickstarted the careers of others like Allister Brimble.



The loading screen to *Action Biker* – the first SID Chris set about remixing with his new AWE32 Soundblaster card.

At this point, I have to mention Chris Huelsbeck, who was, by some margin, the first to solve some of these problems. Having retained his publishing rights, he started to release studio CD recreations of his work (which included the occasional C64 track such as ‘To Be On Top’ and ‘Shades’).

In general, some Amiga composers such as Allister Brimble and Bjorn ‘Dr Awesome’ Lynne were a lot quicker in releasing audio versions of their tracks, because they were already working with studio equipment at that point, and because they were at the height of their careers. The same wasn’t true of Commodore 64 composers, some of which had either left music, or who had taken careers in which producing a studio CD wasn’t a viable option.

The Amiga activity increased the number of people wanting a definitive studio treatment for Commodore 64 tracks. For a while, it looked like the first CD would come out of the Maniacs of Noise, but it didn’t.

This is where my journey starts. I

had previously composed a few SIDs in *Ubik’s Music* and even done some stuff for Superior Software (which was never released, but it was a confidence booster). I wrote to US Gold, Elite and everyone. Then when I went to University, I did some remixes on my Amstrad Studio 100 4-track. At the time C64 music took a back seat for the rest of my University career (though my passion for Infocom games remained undiminished).

In 1994, I bought the new Creative Labs AWE32 card, and immediately set up about remixing *Action Biker*. Badly, but I did it. Further tracks followed, and since I had joined Compuserve, I uploaded a ZIP file of the MIDI files to their libraries, which a small community came across by chance.

In 1995 I went to work at City University in London, where I met the World Wide Web. Since I had a university account with some webspace, it was a simple matter to upload the MIDI files and create some simple HTML: and then <http://www.city.ac.uk/~xa325> was born... C64Audio.com’s first address (it became C64Audio.com in 1997, and for a long while I was the most prolific Commodore 64 remixer!).

I still have letters and emails from those days from people who had downloaded the MIDI files and who were enthused about Commodore 64 music all over again. At that point, I didn’t know SID emulation would be such a definitive thing, so there was a historical preservation component too.



C64Audio.com (which carried mostly MIDI files) is credited with inspiring an equivalent MP3 site run by David 'The Shark' Greiman, a leading light in getting SID emulation and the HVSC SID library organised. That site in turn inspired remix.kwed.org (founded in 2000), which inspired Neil Carr and Markus Klein to merge their respective sites into remix64.com (2001).

At this point, a German producer discovered my MIDI cover of *Monty on the Run*, and wanted to release it as a single with vocals. His forte was releasing records by Philipino singers in the Tagalog language for the German Tagalog speaking community. Initially he used my arranging (and latterly songwriting!) skills. During that relationship, the prospect of a Commodore 64 CD came up ('Commodore 64 Greatest Hits'), and my dalliance with Compuserve had established contact with Rob Hubbard (I just messaged all of the Rob Hubbards on Compuserve: you could do that in those days!). However, just before contracts were signed, the relationship broke down.

As always in my life, there came a point at which if something was going to happen, I was going to have to do it myself. And as always, there didn't seem to be any laws stopping me!

So I started the Back in

Time project. The main things which allowed it to exist were (a) Gremlin Graphics (which still existed) being favourably inclined, (b) Rob Hubbard providing actual MIDI performances which greatly improved the tracks, and (c) Chris Huelsbeck and Synsoniq offering an outlet for it, and a couple of tracks to use.

When it was released, I had actually bothered to do the eCommerce thing, so people could actually buy online, though I still used to receive cheques through the mail to a post office box. I also offered a companion CD-ROM with extra features.

In the late 1990s, Rob Hubbard sent me a DAT tape. On it was an orchestral rendition of *Kentilla* he had produced. It was hugely inspiring. So I had arranged for him and collaborator Steve Scherer to do some more orchestral tracks (including

Back In Time 3 CD case and cover.





Back In Time 2 CD case and cover.

‘Long Lost SID’, which much later was discovered to have been composed and rejected for the unreleased game *Food Feud*).

At that point, a little idea popped up inside my head and suggested that maybe an orchestral concert was in order. We got quotes from the Royal Festival Orchestra for the Royal Festival Hall, but the numbers didn’t work: and more importantly, there was no one to orchestrate all of the pieces.

Somehow, that idea morphed (round the back of Asda, while thinking about reports of a club night in Finland that had sold out) into Back in Time Live: a series of events in student towns aimed at students.

That eventually turned into two events: one in Birmingham that unfortunately

happened during E3, and one in London for the people who missed the first one. While the first one was poorly attended by actual fans, it was amazingly attended by celebs. I do feel really sorry for anyone who came to the first Back in Time Live and didn’t get to the VIP room. Both events were DJ-based, co-organised with the uniquely talented Jason ‘Kenz’ Mackenzie who at the time was running Binary Zone PD, Xmas Chortles and Commodore Zone.

The ambitious Back in Time 3 CD was released at the Back in Time Live event. Showing my uniquely bad timing, I released a 70s concept album in the middle of an 80s revival. Some of the dance tracks put together for Back in Time Live were improved and formed half of the Karma 64 CD I produced with Alistair ‘Boz’ Bowness, who later became a C64 radio legend and voiceover master.

As it turns out, the start of Back in Time Live heralded the end of the Back in Time series (though at the time I had planned out CDs 4, 5 and 6 as an orchestral trilogy). It also heralded a small flood of Commodore 64 remix CDs from other sources, including ‘the scene’ (Remix 64, 2002), Instant Remedy (2002), and Reyn Ouwehand (2000, 2002, 2003, 2007).

At some point in this process, I decided



to make life more difficult for myself by booking live bands for the Back in Time Lives. This was initiated by the popping into existence of 'PRESS PLAY ON TAPE', who had recently formed, and a new band called 'Machinae Supremacy' who had made quite a splash with a heavy metal C64 remix medley. God, they were loud. Today they airbrush that entire period out of their resume!

At this point, after CDs, the next Holy Grail was a DVD. Brighton 2003 was the first chance to do that, but it was only half successful: the hard disk recorder went faulty and only Rob Hubbard's set was fully intact.

St Luke's (2004) plugged that gap. It was, financially, pretty much a disaster.

Given the technology in 2004, everyone worked really hard to make the DVD happen, but it was a struggle, led by the tireless trio of Alistair 'Boz' Bowness (who had been very clever during 'Project Galway' by writing a cross-compiler in PHP to use on Martin Galway's *Streethawk* SID which meant it becoming unlost) and the equally tireless Paul 'Hadrill' Skitz and Jason 'Kenz' Mackenzie.

After that, the remix scene went into a bit of a decline as the CDs sold less well: in 2005 when the DVD was launched at a combined Retrovision/bit Event in Manchester, I had been remixing for over 10 years, and financial pressures were piling in. It was time to concentrate on a day job, with returns for the odd releases (Remix 64 Vol 3, Blithe Blend Bizarre, Rakbit) and the odd live event (bit Live 2007). It would

be fair to say my heart was not in C64 music for quite a lot of this time.

While there was a charity Back in Time Live in 2013, the poor attendance seemed to confirm that I was pretty much irrelevant to the remix scene: yesterday's man. I sought out people to take over the publishing rights to the many SID tunes I was administering, and was on my way out of the C64 scene. Even with the success of Chris Huelsbeck on Kickstarter funding a *Turrican* album seemed to indicate that a crowd funding campaign could work: but not for me. I had no energy and no ideas.

Karma 64 CD case and cover.





'Escape from Sids Castle' - Volume 2 of the Back in Time Symphonic Collection with tracks from Rob Hubbard.

Or so I thought.

Then, two things happened. A chap called Guy Mille contacted me. He had been working with the orchestra of a large town in France called 'Thionville', and had persuaded them that they should be playing C64 tunes. He was searching for scores, and eventually Ben Daglish had passed him to me.

Orchestral C64 music was not a new thing, by the way: there had been performances of medleys by the Play, Score and Video Games Live franchises, which I had been involved in licensing. However, the prospect of a C64-only concert reared its head, and suddenly it actually seemed possible, though difficult without existing scores.

The second thing that happened was Matt Gray wanting to do a Kickstarter. We were both new to crowd funding, but no one else seemed to want to pick up the baton and run with it, so Matt and

Matt's Kickstarter for a new 'Reformation' album.



I teamed up. That valuable experience led to a sequence of Kickstarters that concluded with 'Back in Time Symphonic Collection' – the project that would score all of the tunes necessary to finally make C64 orchestral concerts a reality in 2017, culminating with a dream of the London Symphony Orchestra playing the tracks in the Albert Hall.

I've now been remixing for 21 years and it still feels like I've just started.



**Commodore,  
years ahead of  
the competition.**







## Antony Crowther

Tony literally hit the news headlines with his *Monty Mole* game. From then on, he became synonymous with quality games on the Commodore 64 until moving onto the 16-bit Amiga.

I first remember playing with a ZX80 my dad got me. I think I typed in my first program using one of these. I remember the screen used to flash when you pressed a key – I have no idea where this computer is now which is a shame.

My dad's friend then loaned me a computer, it was a Commodore PET 4032 and to make use of it I typed in loads of BASIC programs from a book I had. This is where I learned how to program BASIC, by debugging programs I had typed in from this book. Later my parents got me a VIC-20 and with this machine I started to replicate text adventure games I had played on the BBC at school.

I then got a Saturday job selling

computers at Superior Systems in Sheffield and got to play on the latest hardware, from Apple II's to Acorn Atoms. I wrote a maze game on the VIC-20 called *Amazing*, that they sold in the shop.

The C64 then came out and I guess this is how it all began for me. The owner of the shop said he would give me a Commodore 64 if I wrote some games he could sell in store. I wrote the games and he released them under the Alligata Software label.

I was pretty much self taught, mainly typing in programs, making them work, changing them and then finally writing my games from scratch.

After studying art and Engineering

drawing at A-level, I thought I was pretty good at graphics. Computers was a new media to me, and ticked all the boxes, so I learnt how to get the most out of the pixels. Nowadays, the quality level is so high its hard for me to compete, so I



*Loco*: the prequel to *Suicide Express*.



just stick to asking an artist when I need something done.

The majority of the tools I used to create a game on the C64 were hand built ones. I did though use an editor called *3IN1*, which I believe got released first in a magazine.

In terms of music, it was my brother who got me interested – he had several keyboards and played a guitar. I was OK at typing in sheet music, and worked on the code required to play it back on the C64. I'm not that good at actually writing music as it takes me ages, and it turns out to be very basic. That is why I teamed up with Ben Daglish on the C64 as he could rattle off a tune in minutes – I handled the code/voices and Ben gave me the notes on timings.

As a general rule I used to work alone. I did team up on occasion with Ross



Googley as he used to do the Amstrad version of games I worked on. Later I worked with Ross on *Bomb Uzal* on the 16-bit computers, and *Liberation*.

I like to think that each game I worked on pushed the C64 a little bit further – from larger scrolling screens, to more and more sprites. *Phobia* was my last C64 game, and probably took me the longest to finish as there was so many levels that were packed into the final game.

*Monty Mole*: a tribute game to Arthur Scargill and the miners' strike.



Looking back I produced many games on the 64 – *Loco*, *Blagger*, *KillerWatt*, *Bug Blaster*, *Son of Blagger*, *Monty Mole*, *Potty Pigeon*, *Zig Zag*, *Bomb Uzal*, *Gryphon*, *Trap*, *Phobia* and who could forget

*Bomb Uzal*: this is one game that got some mixed reviews in the mags of the day.

*Gryphon*: a side scrolling shoot-em-up where you are *the* Gryphon.

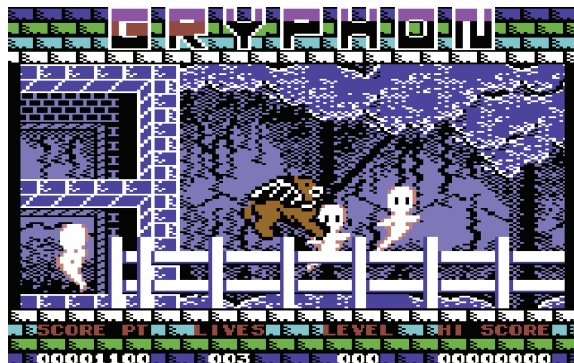
*William Wobbler*.

I remember hanging around with Jeff Minter, and used to meet up with him at Computer shows and have a few beers. My wife and I used to arrange visits to his house and that is where I first played on an Amiga 1000 – I so wanted one after seeing it and ended up buying one.

Not long after that, I moved on from the C64 and solely worked on the Amiga with *Phobia* being my cross-over project.

Back in the day I started a scrap book and collected all the reviews of my games from the magazines. This used to cost me a fortune as my games seemed to be in a lot of magazines and very often. I tried not to

*Phobia*: the last C64 game Tony worked on before moving onto the Amiga.



get too upset with the odd bad review that would pop up.

Without my love of the C64 I would not be where I am now today. I was addicted to writing games for the machine – which was not a bad thing, as I enjoyed every moment of it. The only thing I didn't enjoy was the £350 phone bill from using Compunet!





## The Oliver Twins

Andrew and Philip were in the BBC/Amstrad (and sort of Spectrum) camp. They didn't even own a Commodore 64 – but their games (particularly *Dizzy*) were well received by '64 gamers.

In the mid 80s players had to choose which computer to back. We chose the Dragon 32 whilst others at school chose the VIC-20. When it came time to upgrade – all VIC-20 owners stayed loyal to Commodore and upgraded to the C64. We, on the other hand, moved to the BBC Micro. When we found it tough to get our games published on the BBC, we moved to the Amstrad and then our games were so popular they were converted to the C64. Some, particularly the *Dizzy* series, were really popular, thanks to Ian Grey and others who did the great conversions working alongside us.

However, in 1990 we moved to the NES and wrote loads of games for that

platform. What we discovered was that from a capability point of view it was really similar to the C64 and we loved it. We loved the redefinable characters, the hardware scrolling and hardware sprites. That made us think – perhaps we should have moved to the C64 rather than Amstrad. It gave us a new respect for the C64 as a computer.

When it came to the C64 – all the buzz on the school playground was of this genius hippy – Jeff Minter. What he didn't know about C64 or llamas wasn't worth knowing!

The Commodore 64 introduced a great additional audience to our games and had we had more time and understood the

power of the machine at the time, we could well have ended up in the C64 camp! This would have meant at least that all our games would have scrolled smoothly and had a great frame rate with some great SID music to boot.



Ian Grey's conversion of *Dizzy* for the '64.





## Geoff Brown

First a musician, then a founder of one of the most successful publishers of the 1980s and 90s. Geoff brought Commodore 64 titles over the Atlantic from the USA, and us Brits lapped them up.

My first games computer, around 1981, was an Atari 800 which I bought with most of my spare cash at the time, much to the dismay of my wife. However that single purchase changed the course of my life and led me to the destiny I was to follow, with the start of two seminal UK companies CentreSoft Distribution and US Gold Publishing, both of which changed the face of gaming in the UK.

The key thing with the Atari was that it was a US based machine and so most of the games for it were coming from US developers and publishers which led on to me importing games and starting my publishing company. The first game I imported was *Galactic Chase* from Spectrum Computers (odd name considering what was to come!). It was a small start as the Atari, although popular, never really caught on in a mass-market way, but nevertheless it set the foundation of the systems I would implement in the growth of the businesses.

As I was also a programmer I started to avidly read *Compute Magazine* which was imported from the US as it had lots of cool programming tips. It not only

featured Atari, but also the new C64 too. More importantly for me it not only had the geek stuff, but also carried lots of ads and reviews for new US games. So the stage was set for me to contact those US publishers about bringing their games to the UK.

If the C64 had not come along I may have just run a nice cottage industry, but all that changed when it started to sell in the hundreds of thousands in the UK to become, in the early 80s, 'the' games computer to have. It was expensive, compared to the Spectrum, but it had the street-cred that the enthusiasts wanted. In terms of graphics it was just streets ahead of its competition and consequently many UK publishers were developing games for it. I can't explain what the difference was between the UK and US developers at the time, but the difference was astounding in terms of graphics and playability. Here I was with all the contacts in the US I had nurtured through my initial Atari business and decided that the C64 was going to be my focus as the next 'big' project.

The rest is kind of UK game folk-lore, and ably explained in 'The Story of US



*Beach-Head*: one of US Gold's early titles that demonstrated the quality of C64 games being developed in the USA.

Gold' book, as I then went out to the US and brought back C64 versions of *Beach-Head*, *Forbidden Forest*, *Aztec Challenge* and then later *Bruce Lee*, *Zaxxon*, *Spy Hunter*, *Infiltrator* and many, many more. These games were fantastic at the time and streets ahead of the UK competition. I remember I did a show somewhere down south where I had set up all my new games from the US and there were also UK publishers showing their latest games too. I clearly remember Anil Gupta of Anirog software saying words to the effect of "Oh my God we are wasting our time with our games" and vowed to send all his programmers back to the drawing board! There were several other publishers who felt the same. So our games went from selling in the thousands to selling in the hundreds of thousands almost overnight, matching the growth of the installed base of C64 computers which was growing at an exponential rate.

One advantage we had over our competitors was that the C64 indirectly enabled us to be a monster in the ZX Spectrum market too. All the owners of Spectrum computers wanted the great games that were available for the C64 so that meant I had to organize conversions from C64 to Spectrum of our trend-setting games. So I have another reason to sing the praises of the C64 as it also meant the start of US Gold's development capability and growth of using third party developers.

Once this group of developers were established it also meant I could step outside the mere licensing of finished code from the US to creating games from

scratch. I had decided at the time that I needed to find a way to capitalize on the enormous popularity of coin-ops so I harnessed the conversion strength we had to do this. This was the start of the many coin-op licenses we were famous for. I suppose the two most notable for me were *Out Run* and *Gauntlet* which were both developed in the UK for US Gold with developers I had used for C64 conversion work to the Spectrum. Later this led on to movie, sports and personality licenses all indirectly founded on our initial C64 to Spectrum conversions. These really did sell in the millions of copies and turned US Gold into a development powerhouse in the UK.

So I have many reasons to thank Commodore for, for the launch of the C64 as it not only formed the foundation of my US Gold licensing business and CentreSoft's distribution power, but also the growth of the development side of the business. Along the way it made millions, not only for us, but for the myriad of other bodies beavering away to deliver the great games we published on the C64 as well.



*Tapper*: an example of one of US Gold's many arcade conversions.





## Andrew Hewson

First a successful writer and then a publisher, Andrew headed up one of the UK's leading publishing companies and brought many classic C64 titles to market.

I joined in on the home computing revolution when I decided to purchase a ZX80 shortly after it was first released in the autumn of 1980. I progressed from there to the ZX81 and then the ZX Spectrum writing and publishing a book about the first two machines and two books about the ZX Spectrum.

My early exposure to computing had been via writing some assembler code when I was in the sixth form in the late 1960s and a week long crash course in Fortran

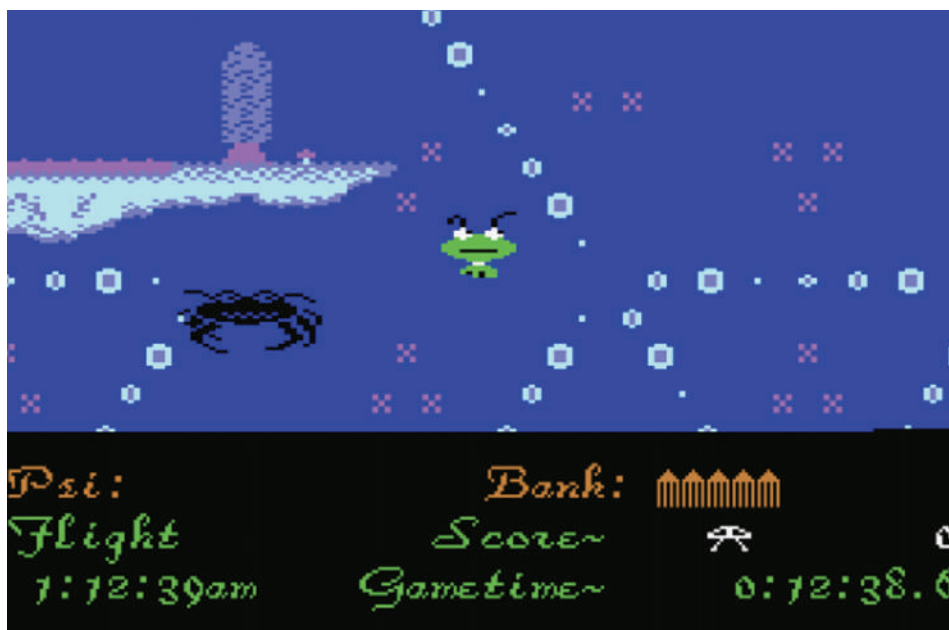
programming at university. In 1973 the research laboratory where I was working acquired a Hewlett Packard 2100 16-bit computer with 64K of RAM, two fixed and two demountable 2MB hard drives, two tape drives, a paper tape reader, a line printer and a teletype. I cut my teeth on the machine writing in Fortran and by the time I came across the C64 I had also worked on a Univac machine, an ICL running George 3 and a DEC PDP11.

I was interested in earning myself some money and the mechanism I chose

was to write books, moving over to games publishing when I realised how many talented people there were out there busy writing code.

My company, Hewson Consultants and later just Hewson, published a number of games for the Commodore 64 starting with the Andrew Braybrook

The somewhat underrated *Gribbly's Day Out*.







trilogy – *Gribbly's Day Out*, *Paradroid* and *Uridium*.

I was in awe of Andrew. *Gribbly's Day Out* was, and still is, massively under-rated in my opinion and the simplicity and elegance of *Uridium* had a powerful impact on me and changed the way I thought about what our games ought to achieve.

Of our stable of releases, the game which did please me most though was *Nebulus* because I helped to shape it conceptually. When I discussed the first vertically rotating demo with the author, John Phillips, he was thinking about joining towers together to make battlements for a medieval castle. It was during our discussions that the final concept arose of a platform game wrapped around a tower.

In the early days when we released a

game I pretty much read every review in order to flesh out my own understanding of what we were trying to achieve. Later on when we became producers who were actively involved in improving, bug-testing and polishing the code that we released, I knew that we had done the very best we could and I began to be less interested in what the press was saying. We trusted our instincts.

The Commodore was, and still is, a great games machine which gave many people a great deal pleasure.

The only thing I could never, ever understand was why the manufacturers more or less ignored its success as a games platform and focused all their marketing on promoting it as a business platform which they did again and again.

Bizarre!

John Philip's *Nebulus* – the game Andrew had a hand in designing.



## Ben Daglish

Some games were worth buying just for the musical score that played whilst the game loaded – this is true for many of the games that Ben supplied his tunes to.

My first look at a ‘home computer’ was the BBC Micro sometime around 1981 when they were desperate to throw as many of them at schools as possible. Before that, the nearest I’d been to a computer was playing a text-based *Moon Lander* on a teletype connected to some mainframe at Aston University when my father was lecturing there. I wrote an essay on ‘How computers could be used in schools’, and won a BBC Model A for the school, which meant I became one of the lucky few that got to play with it. One of the other such-privileged souls was Tony Crowther, who, knowing I was a musician, later asked me to start writing out some notes for him on a bit of paper so he could transfer them to his latest game on the C64. Not long after

that, I found myself round at Tony’s house typing it in myself, and got hooked.

I’d been into music for years, starting off on the penny whistle when I was a toddler, then moving on to harmonica, recorder, oboe, cornet and ending up studying orchestral percussion – something that very nearly became my full-time job, until I got attracted by the filthy lucre of the games-music world!

For me it was all about the mighty beast that was the SID – no other sound chip at the time came anywhere near it. The C64 was always the machine that I wrote for first – I considered all the other machines poor cousins. It was always a chore to do the conversions to the AY chips, and please, let’s not even mention the Spectrum beeper!



*Deflektor*: a puzzle game with a very catchy Daglish tune.

The only tool I ever used on any machine was a text editor, to (in effect) write the data section of the machine-code driver. Even when things like trackers started appearing, I always preferred typing notes straight in to the machine – you had a lot more control that way.

From a musical point of view I was in awe of Rob Hubbard. Certainly, hearing his stuff spurred me and Tony to 'up our game', both from a driver and a musical point of view. I was always impressed with Martin Galway as well, of course, but Rob was 'the daddy', what with already being a proper musician an' all! I never really was particularly in awe of games as such, but I was certainly in awe of Tony Crowther as a programmer (and still am to this day!). Jeff Minter as well, of course, was (and still is!) a mighty coder.

I worked on literally hundreds of games – if you really want to know, there are online lists that are far more reliable than my memory! They each had their own challenges, but always the main one was the memory requirements – often, you had to fit the driver, tune and SFX in something like 4K. Generally, other than in the early days with Tony, I tended to work alone – I'd get a phone call saying something like "we've got a fighting game – can you do us loading music, high score and five level tunes by next week?", at which point I'd lock myself in my room, churn it out, then send off a floppy in the post.



Of all my SID music, my favourite track has to be *Trap*, due in no small part to the 'mini-movie' at the end, which I think was probably one of the world's first 'Demo's'. I also wrote a 2-SID version of the music, which was quite an achievement, I seem to recall.

*Trap*: Ben's favourite composition.

In terms of magazine reviews, from what I can remember, they were pretty fair. I don't recall a time when I thought that a game I'd worked on was being unfairly maligned, and I seemed to mostly get a reasonable score for my music, so I wasn't about to complain – especially as I'd often been out drinking with the reviewers the week before.

The C64 was my first synthesiser/sequencer, and influenced my music-making for the rest of my career.

A truly amazing little machine, and it was a great shame when Commodore went the way of all the other 80s micros.

*The Last Ninja*: a game graced with a number of Ben's memorable scores.





## Brian Flanagan

Whilst at Ocean Software Brian worked on *Operation Wolf* and its sequel *Thunderbolt* – the first games he contributed to on the Commodore 64.

My first computer was a used, modded ZX81 with a custom keyboard, which kind of allowed me to get my head around the basics of a computer. The Commodore 64 was my next computer and again was second hand and bought by my dad from a family friend who was in some cracking/ demo crew back in '85. I was stuck with a tape loader for the first few years until I could get my hands on a 1541 floppy drive.

I just loved games; loved the amazing worlds I saw in the games magazines and *Zzap! 64* showed me the world of the demo scene, which in turn exposed me to more great pixel art. I just had an insatiable appetite for pixels back then! I honestly

couldn't even consider doing anything else after my family had moved from Essex back to my hometown of Manchester. Nothing else interested me at all, I was absolutely myopically focused on being a pixel artist and Ocean Software was a bus ride away so I had no excuse! I used to copy bits of screenshots from *Zzap! 64* and *C&VG* onto graph paper when I was at school or unable to use the C64 – I was plotting pixels by any means necessary.

I actually think I was lucky to get a C64 – If my demo scene friend had never sold his, god knows where I would have been. It had chunky double width pixels but had a colour palette and that amazing sound chip, and was actually a usable machine

thanks to the keyboard. Back in those days it was either a Spectrum or a C64 and there was no competition in my mind, ever. I had a 50/50 split of C64 and Spectrum friends, but the clashy monochrome and burpy sound of the Spectrum never

*Operation Wolf*: Brian contributed to the graphics but was never credited on this game.



appealed once.

My first graphics attempts were done in Gary Kitchen's *GameMaker*, which I borrowed from a friend, for building simple background scenes and tests as I could easily get sprite overlays moving around on the screen.

I didn't have any animation skills so started animating stuff by making little paper fastener jointed cardboard cut-out monsters, which I could pose and trace onto graph paper, then copy into *Game Maker*'s sprite editor.

For bitmaps I was using *KoalaPainter*. As I kind of sucked at illustration I would trace art onto acetate, then tape the acetate to the screen and block out the basics before going it on a pixel by pixel basis.

For backgrounds I started with the *3IN1* graphics editor which I actually attempted to enter myself by hand via a magazine listing before crumbling and mail ordering for a copy.

At Ocean, I got into using Steve Beat's sprite editor which was an amazingly powerful sprite sequencer for its time. That software was an inspiration for two other non-commercial sprite sequencing software packages I helped design whilst living in the US.

I was also big into demos at the time so was exposed to a lot of the early demoscene music – Chris Huelsbeck's 'Shades' being a high point. And then there were the games that took up all the spare time I had left – *Antiriad*, *Cauldron*, *Sanxion*, *Wizball*, *Paradroid*, *Cybernoid* and *Impossible Mission*.

Programmers that shone for me at



this time included John Meegan, Tony Crowther, Stavros Fasoulas and the Sensible Software guys. Apart from the games, I probably had more respect for the guys that made the amazing graphics tools I used once I got into the industry.

Looking back, I am not really fond of any of my C64 stuff – most art people are never satisfied with their own work, especially early attempts and my C64 games were my first commercial work. We were though at Ocean pretty competitive about review scores – although I am not sure a lot of the scores reflected the quality of the final product!

The C64 for me was a self contained time capsule of my teenage years, all my hopes, dreams, desires and frustrations all boxed up in a beige plastic case. It was my escape, my gateway to the software industry and in the end, a way out of a difficult home life that allowed me to find my own independence.

And it had the best sound chip that ever graced a computer.

*Operation Thunderbolt*: the follow up to *Wolf* rated 92% in Zzap! 64.



## Andy Walker

At Taskset, Andy programmed an impressive number of games covering a number of genres including sport, adventure, puzzle and arcade.

I got into programming in the late 70s when I was working for a government department in Cheltenham specialising in electronics – the first microprocessors started to become available – first 4-bit then 8-bit. I taught myself machine code on the computers that were available to me whilst I was there.

In the early 80s I was writing coin-op video games – usually on custom hardware and often with Z80 processors. I had, though, started with 6502 on Tangerine+ homebrew hardware so when the home computers began to appear with Z80's and 6502's they were a natural target for me.

I was working on *Dig Dog* for the Oric

(yes, honestly) and *Cosmic Convoy* for the VIC-20 when Commodore announced the 64 – or at least that's when we heard it was coming to the UK. Thus the VIC-20 version was never completed.

I can't remember the retailer but I bought a Commodore 64 at the very first opportunity I had – I really couldn't wait to get my hands on one as I had heard great reports from the USA. I loved programming 6502 and the C64 was a real gaming machine, not just a processor and visible memory – it had a proper graphics chip and sprites and a music chip and loads of RAM and interrupt lines and so much more!

A big thumbs up for Commodore

machines was that the company provided documentation that would actually tell you where the address-mapping started and stopped and lots of other basic information that saved weeks of discovery. Also detailed register



*Cosmic Convoy*: Andy's first game on the Commodore 64.





usage for specialist VIC and SID chips meant that utilities could be written to really drive them rather than skating around on the surface. Some other manufacturers were notoriously secretive about the most interesting bits (Atari, you might say) and tried to steer users to cartridges – or built-in BASIC if you really wanted to write code. Okay, it did take time to develop the utilities – and we knew they'd never be seen outside

Taskset (the company I worked for) but it led directly to a better understanding of what the hardware could do and that in turn led directly to game ideas.

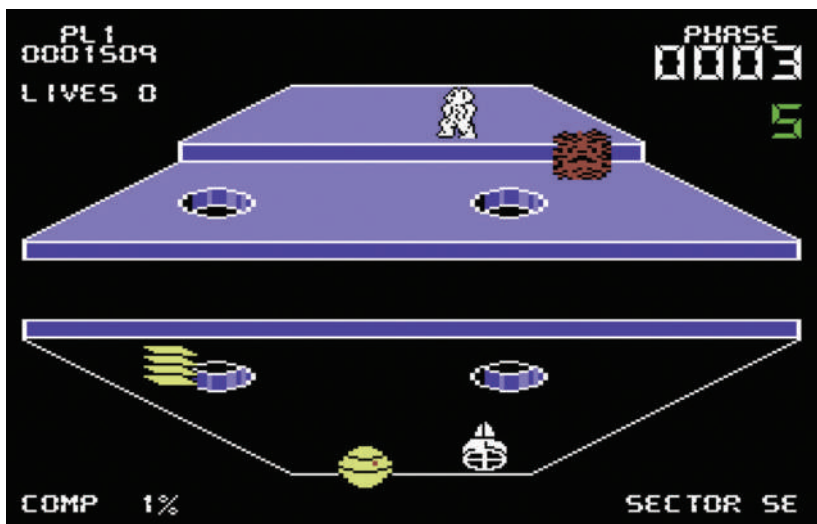
It took a while for development tools to emerge – initially developing on the target C64 but later using Sage machines and later still networked Apple IIE's, cross-assemblers and ROM emulators. The first thing we did was ditch the built-in Commodore software and develop an assembler-level monitor program (this took much longer than I thought). Lots of time and effort was spent developing in-house

tools for graphics and sound including an awesome graphics-tablet linked to custom sprite and character generation, animation and export. Gradually a games-based real time operating system (RTOS) emerged.

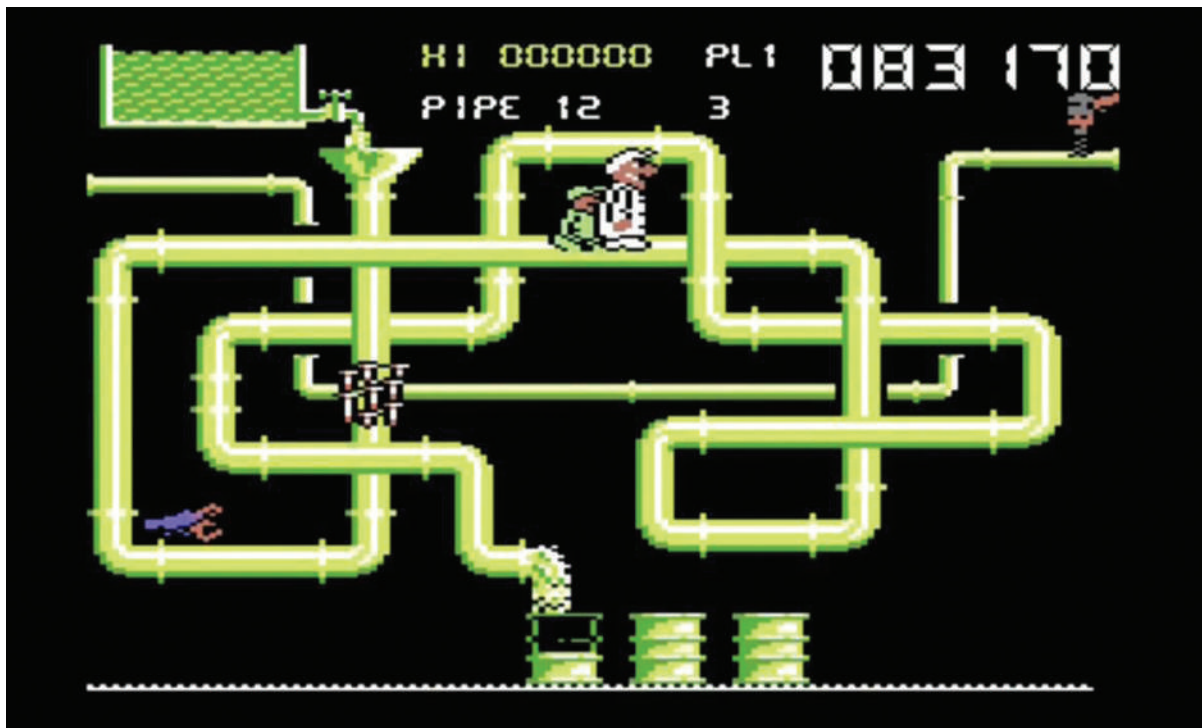
I remember being in awe of Minter at the time. His games were unique, funny and very playable. *Attack of the Mutant Camels* was, I think, the first game with real inertia. The beautiful presentation of the Ultimate games for the Spectrum were also a lesson to us all. Rob Hubbard's sound was unmistakable and rightly had its own following divorced from the games

arena. Some C64 games from the USA were well presented but it was always difficult to work out who had actually written them. That was never an issue with Minter and Llamasoft as it was clear that it was developed by someone who had the right stuff.

*Cad Cam Warrior.*  
An addictive space blaster with an upside down twist.



*Uchi Mata:* the thrills of judo brought to the C64.



*Super Pipeline II:*  
the game Andy is  
most proud of.

I remember reading the reviews of my games as soon as they were published (we had to wait for publication and delivery of a dead tree version in those days). It quickly became clear that some magazines had real players as reviewers. I don't think any of us lost sleep over a review but we certainly read them all.

I worked on a number of games on the Commodore 64:

*Cosmic Convoy, Jammin', Pipeline, Gyropod, Poster Paster, Super Pipeline II, CadCam Warrior and Souls of Darkon.* The game I worked on that I am most proud of is *Super Pipeline II* - the game had great gameplay including difficult decisions under

pressure wrapped in the best graphics and sound that we could do. The relationship between Foreman Fred and the plumbers (both the software sequencing and socially) is the heart of a good story but the levels are intricate and learnable and I am still pleased with the inter-level interludes and even the animation of the hi-score table. All round, my best work.



**COMMODORE 64**  
THE PERSONAL COMPUTER







## Tim Follin

Writing 15 tunes for the Commodore 64, Tim was a prolific musician and games were bought just to hear his latest composition. On many occasions, Tim teamed up with his coder brother, Mike, on C64 games.

My first taste of home computing came when we visited my cousin one holiday in around 1983. He had just bought a ZX Spectrum and he showed us all *Manic Miner*. My instant reaction was that I wanted to play it and wanted one of those computers! My brother Mike, being nearly nine years older, was the first to get one in my immediate family, and I used to sit and watch him type in BASIC programs copied from magazines and text books, before he got into machine code programming. I craved my own Spectrum but for my birthday settled for the cheaper ZX81, which I loved. I learned how to program assembler/machine code on that

and even got it to produce some sound effects through the tape port, though the computer actually had no official sound output. Then I got my own Spectrum, I think the following Christmas, because I have a clear memory of sitting playing *Knight Lore* while watching *Raiders of the Lost Ark* on TV on Christmas day! I soon started tinkering with machine code on the Spectrum and created a program to play one-channel music using a phasing sound. By that time Mike was working at a small local software house called Insight and asked me to write some title music for his new game *Subterranean Stryker*. It went well and I ended up writing four or five more pieces for other games at Insight



*Agent X II*: budget priced game with one of Tim's best tunes.



before following Mike to Software Creations, where I landed my first full-time job. It was only then, at 17, that I finally saw – and heard – the C64. I knew instantly that it was far superior to anything else I'd heard, especially the AY chip

the 128K Spectrum used, which was really awful. It was the first time I felt like I could actually produce something that resembled 'real' music. No longer would I have to put up with the distorted, scratchy sounds I'd managed to produce on the Spectrum! It sounded like a warm, analogue synthesiser, actually quite 'un-electronic' bizarrely. So I've actually never owned a C64, I've only ever used development-adapted machines provided by the company. I missed out!

I think it was probably inevitable that the first thing I tried to program on a computer was sound and music. I grew up listening to Mike playing Vangelis and Jean Michel Jarre and I loved the sound of synthesisers. I'd wanted one since primary school, but knew they'd always be too expensive to ask my parents for. Then when I was about 12 I got a tiny monophonic synthesiser called a Yamaha CS01 for my birthday. It was very small and very basic, but I loved it and it actually taught me the basics of synthesised sound. I learned what different wave forms sounded like and also learned that you could make a phasing sound by gradually changing the width of a square wave (a technique I later reproduced on the Spectrum and C64), so when home computers first appeared I think I instinctively saw them as an opportunity to generate sound, despite the ZX81 not actually having any! I never did buy a really good synthesiser, so throughout my time at Software Creations the C64 became my favourite synth!

As mentioned, the ZX Spectrum was the first computer I produced music for,



but after discovering the C64 it was clear that it was far and away the best synthesiser chip available in a home computer. The thing I loved about programming the SID chip was the very low-level control you could have over it, the ability to very accurately manipulate how and when it produced sound. I found that to be invaluable. For me, programming the SID was much more enjoyable and much more of a creative experience than using a MIDI sequencer and a synthesiser; sequencers seemed to lack all subtlety and flexibility in comparison. Also I think I found programming the SID much more enjoyable partly because of its limitations. Having only three channels was actually a similar limitation to writing for a string quartet (or trio), or a guitar or a small group of musicians; once you were familiar with those parameters you could be creative within them. This was also a bit of a constant irritation however, as those limitations of the SID were generally only known and appreciated by gamers, who instinctively understood what they were because they were used to hearing the SID.

*Bionic Commando:*  
conversion of the  
Capcom arcade game.



*LED Storm*: a vertical racing game that got 94% in Zzap! 64 - Tim got 94% for his tunes.

Those who weren't 'initiated' into it I think just heard synthesised noises and usually failed to hear the actual music. Ironically this is probably less true now than it was then – in recent years 8-bit sounding music seems to have become a mainstream retro thing, making it a sound that's become familiar to a wider audience. For instance, my kids now identify '8-bit music' as cool, even though they have no idea why it sounds like that! I do try to explain it to them from time to time, but for some reason they always find something else to do before I finish... Can't think why!

I wrote my own music drivers for the ZX Spectrum, but that was Z80 assembly language, so when it came to the C64 I had no clue where to start. Thankfully Steve Ruddy at Software Creations stepped in and wrote probably the best music driver I ever used at the company, based on my old ZX Spectrum driver. In

retrospect I could – and probably should – have asked him to recode it to make it more usable, but because I was under pressure to start writing music ASAP I decided to just stick with what I knew, which meant sticking with my method of coding music directly into an assembly language compiler. For the C64 I used an early PC-type machine called a Tatum Einstein. I basically typed in the music line by line in pairs of numbers that represented note pitch and note length, in cycles. So a middle C played for one second would be something like '40,50' where 40 would be the pitch and 50 would be the number of cycles to play it for, at 50fps. However for timings I usually picked an easy number to multiply like 2s or 3s, then it was easier to do the maths, dividing or multiplying the length according to whether it was a quaver or crotchet etc. Similarly with the pitch, I knew that an octave was a multiple of 12 (in the chromatic scale) and so typed in notes by imagining the intervals as I went along. It sounds overly complicated but actually it forced me to imagine everything clearly before typing it in. The

*Ghouls 'n Ghosts*: a game Tim teamed up with his brother Mike to create - a haunting melody by Tim.





boss of the company Richard Kay bought me a small synth to use as reference, but I found it quite distracting and pointless, so I just took it home and played with it there instead! I suppose my process of writing for the SID was a bit like writing a score for orchestral instruments, where you have to wait to hear the actual performance; it forces you to have to imagine it as clearly as you can. I used this same format from the very first ZX Spectrum driver I wrote when I was about 14, right through until I stopped programming 8-bit music in the mid '90s.

I had virtually no knowledge of what other games were available on the C64, I missed out on having a machine at home and by the time I was working full time I'd pretty much stopped playing games and had a girlfriend taking up all my spare time, so I only ever heard other musicians' work when someone at Software Creations would occasionally say 'have you heard this?' or more usually 'can you make it do this sort of sound?' because they'd heard a particular sound effect. I wasn't a C64 gamer by any means – I know it's heresy to say it, but I was a hard core ZX Spectrum fan really!

I wrote around 15 tunes for the C64 in all, mainly for Software Creations games. Sometimes I'd also write music for a title being developed by a different developer working with the producer we were working with, such as Taito. It took me a few tunes to properly get the hang of the SID chip, I remember the first tunes I wrote had problems with the way I was



switching notes on and off – I think if you did it too quickly or in the wrong way, you'd get a strange inconsistency in the way the note would play and it'd sound like it was stuttering. Tunes like *Agent X II* and *Raw Recruit* had that problem, but I eventually worked out what I was doing wrong. I experimented briefly with samples for a game called *Peter Packrat*, but I really didn't like using them because they always sounded so clunky and low quality compared to the purity of the SID, it was like the audio equivalent of clashing colours, so I didn't bother with them again. I hadn't really exploited the filters built in to the C64 until I got to *LED Storm*, when I realised that by setting them to a certain frequency you could make two notes played together distort, making a sound a bit like an electric guitar. So for the *LED Storm* title tune (originally intended for *Ghouls 'n Ghosts*) I did a piece that had an electric guitar part, but though it worked well on most of the development machines we had in the office, we realised that it didn't work on newer machines at all, the filters sounded completely different. Rather than

*Peter Packrat*: Tim experimented with samples within the tunes in this game, but was not convinced.



*Black Lamp*: a fantasy romp that Tim supplied the tunes for.

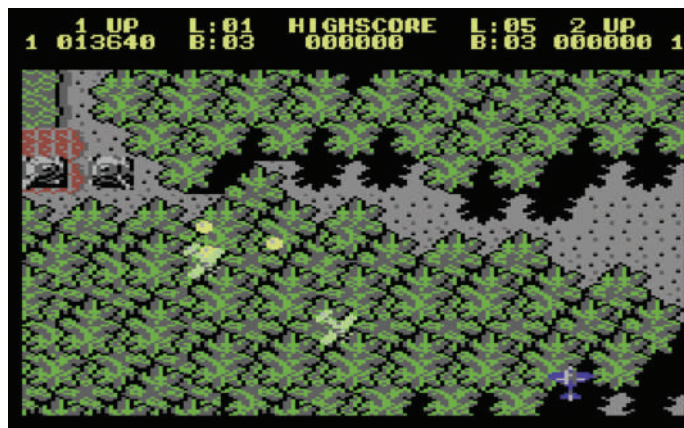
write a different tune, we decided to leave it as it was. In fact Steve Ruddy actually programmed a secret 'filter fix' into the music driver, so you could use the arrow keys to adjust the filters up and down to get it right – not that I expect anyone discovered it or cared to adjust it! The C64 filters were always a bit hit and miss, so I think like most musicians I tended to use them in broad sweeps to make sure they'd work on every machine, either keeping them low or making them go from one extreme to the other, the sort of thing that created that classic 'wow' bass sound. By the time I'd finished

*LED Storm* I wanted to do something different and more organic sounding for *Ghouls 'n Ghosts*, so I actually went quite minimalist with it, sticking mainly to sine waves for the lead instruments to create a sort of flute or whistle

*Sky Shark*: Tim provides a bouncy, catchy tune and effects to this Taito conversion.

sound. Most of the C64 games we worked on were arcade conversions and so I was still obliged to base the music on the original arcade music, but what I'd do was steal some of the ideas, often just the first few bars of a few of the tunes, then I'd do my own thing with it and take the tunes somewhere else. I'd also only pick the most interesting tunes from the arcade version, usually just

two or three, so the rest of the music would be original. I think my favourite tunes were from *Ghouls 'n Ghosts*, especially tunes like the high score and some of the level tunes; they had a certain sort of leafy, organic atmosphere about them I never captured again. Technically it was one of the simpler soundtracks I worked on, but I think the more limited sonic palette actually forced me to produce more interesting, more harmonic music. There's a pattern here isn't there – maybe limitations really do breed innovations!



The magazine reviews of our games were usually passed around as soon as they were published, so I'd always have a glance at them of course, who wouldn't! Fortunately they were generally positive and so I was always happy with them. If they didn't particularly like something I just put it down to personal preference – something I learned early on is that reviewers have different opinions and preferences just like the rest of us, that's just the way it is. But I'm always delighted when people appreciate and enjoy what I've done and it's really my central motivation for creating things. I think creating any form of entertainment or art is pointless unless it's created for others, because it's all essentially a form of communication, it's a way of conveying ideas, whether musical or otherwise.

In my opinion, if you're creating something and you're not interested in communicating, then you shouldn't expect anyone to listen!



*Psycho Pigs UXB:*  
Tim joined up with his bother Geoff to provide the jolly tunes for this slightly crazy game.

Writing game music wasn't something I'd ever really set my sights on, it was really something that I sort of fell into doing, more because I was fascinated with creating sounds and working with computers. But what the C64 did, I think much more than the Spectrum, NES or Amiga, was to make an essentially cold and clinical process sound like something natural and familiar; it had an almost organic personality about it. I don't know whether that was because of the attention to detail you had to have to program

it, or whether there was a imperceptible randomness to it, but whatever it was, it was head and shoulders above its competition and it made the process of writing music feel like it was genuinely worthwhile.

*Qix:* Another Taito conversion with a Tim Follin cracking tune.







## Jon Hare

A veteran in the gaming industry, Jon and Sensible Software had a string of huge hits on the Commodore 64 – many of them made more memorable by the Martin Galway tunes that accompanied them.

I started my games career in 1985 when I worked as a pixel artist for a games company called LT Software who were based near Basildon in Essex. Chris Yates, my old school friend, effectively got me the job.

Chris and I were at school together and played in a band. When we were 19 we had both left college and didn't really have any proper work (although I did some shifts in the warehouse at Asda). Chris taught himself to program thus LT offering him a job – I was around his house one day and helped him with some art. LT liked my work and hired me too.

I worked first on the ZX81 on a game called *Sodov the Sorcerer*, then the ZX Spectrum for a few months on games

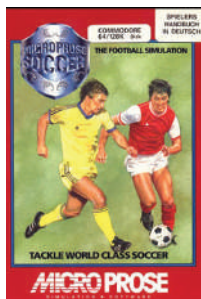
such as *Lonewolf* & *The Ice Halls of Terror* (never released), *Flyer Fox* and *Twister* before first touching the C64 later that year to do some early, never used doodles on the KoalaPad for the game that would eventually be known as *International Karate*.

Six months after joining LT, we set up our own company, Sensible Software.

I studied theatre design at college (it is a form of art) so I naturally took on the art role and Chris the programming role, we designed all of our Commodore 64 games together. The only other people involved in any of our C64 games were musicians Martin Galway for *Parallax*, *Wizball*, *Microprose Soccer* and *Insects in Space* and Richard Joseph for

*International 3D Tennis*.

We worked on the ZX81 and Spectrum but the C64 was the superior machine for us – it allowed us to create better defined graphics than the other machines with better colour range. It also seemed to move more



*Microprose Soccer*: the grandfather of *Sensible Soccer* and plays a great game on the C64.

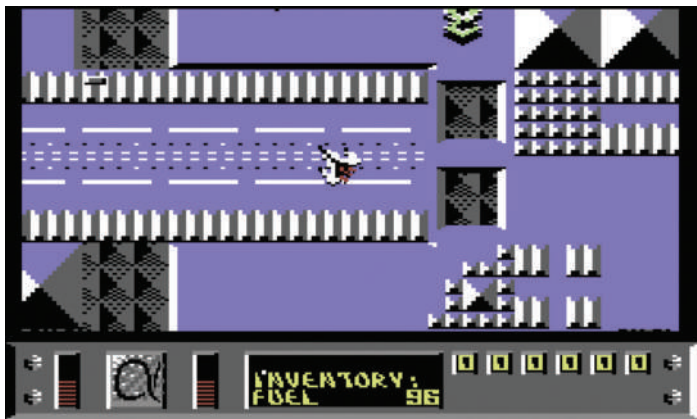


smoothly allowing us to try and emulate the arcade machines we were inspired by. Finally the SID chip was just amazing for sounds and especially music... all around it was a big step up for us at the time.

I mostly used an art package whose name I cannot recall, maybe it was *Paint Magic*. I used the KoalaPad briefly but found it too hard to control exactly as I liked to define each individual pixel.

There were loads of games I used to love on the C64, in no particular order: *Leaderboard*, *Master of the Lamps*, *Dropzone* and many others. I had a lot of respect for Jeff Minter and Archer Maclean as British developers, on the music front I absolutely loved Martin Galway's stuff and a lot of Rob Hubbard's too, although my favourite in game music was Russell Leiblich's work in *Master of the Lamps*. The C64 was great for psychedelic surrealities and a lot of the games I liked touched on this.

On all of the games I worked on at Sensible Software I did all of the art, Chris did all of the programming. We designed together and either Martin Galway or Richard Joseph did the music. In chronological order those games were:



*Galaxibirds*: a slightly surreal vertical shooter.

*Parallax* (1986) published by Ocean, biggest challenge was finishing it off, we nearly ran out of memory. Martin's music was incredible for this, it still gives me goosebumps every time I hear it.

*Galaxibirds* (1986) published by Firebird. A silly little budget game knocked out by both Chris and I in a week for a bit of fun.

*Wizball* (1987) also published by Ocean, *Zzap! 64* voted this Game of the Decade for the 80s and I think it has some of my best C64 art. The music was excellent too, featuring some guitar and bass licks from Chris and I. I love the whole idea of *Wizball*, from the controls, to the level progression to the collecting

and mixing paint and colouring in idea, in my eyes this is our best C64 game.

*Oh No!* (1987) also published by Firebird. Another silly budget game based on an arcade machine and knocked out by us in

*Parallax*: Great parallax scrolling blaster with a classic Martin Galway soundtrack.



*Wizball*: the game Jon is most proud of being a part of on the C64.

two weeks.

*Shoot-'Em-Up Construction Kit* (1987) published by Palace. This started off as a tool made by Chris for me to make games and ended up being a game in itself, our first number one game and one I am very proud of.

*Microprose Soccer* (1988) published by Microprose. This was our first football game – we wanted to call it *Sensible Soccer*, but Microprose had other ideas. On release it was acclaimed by C&VG as the best sports game on any platform.

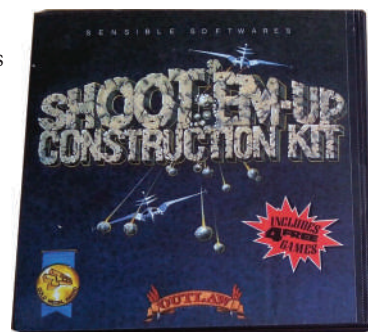
*Insects in Space* (1989) published by Hewson. A fun little game and an out and out *Defender* clone.

*International 3D Tennis* (1990) obscure 3D style and our only C64 game not heavily influenced by arcade machines,

it was also our last game made for the machine.

We were obsessed with reading magazine reviews, there were so many of them. In general we agreed with all of the good ones and hated the odd negative one.

The Commodore 64 is the machine that kicked off my career as a games artist and designer and also as a games development company director. I love the machine and it is second only to the Amiga in my affections as the greatest game machine I have ever worked on.



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**Zzap Gold Medal.**

"Having been totally addicted to the original Super Mario Bros., it is no mean feat to say that I found the Giana Sisters as compulsive."

C + VG.

Screen shots from Amiga version.

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TWOsome WHO'LL  
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## Paul Hughes

FREELoad revolutionised the way Ocean's games loaded - accompanied by Martin Galway's tunes it's something Paul gets asked about a lot when talking about the C64.

I'd always been a bit of a Commodore fan boy. My first foray with Jack Tramiel's fledgling company was with the Commodore PET. A school friend's parents ran a loan company in town and all their business accounts were run from a set of three PET computers.

At weekends we would go to his office and play the likes of *PET Invaders* and the inimitable *Nightmare Park* on this wonderfully futuristic metal box.

This would be the machine that I would learn 6502 assembly language on and so from here would move on up the 6502 ranks from a PET 8016 then the VIC-20, finally (for the time being) ending

up on the Commodore 64.

I'll never forget my first look at a 64. It was in a local computer shop that I worked in at the weekends whilst still at high school. The first few games we had were sourced directly from the US from a little company called 'COSMI' and the very first game we fired up of theirs was *Forbidden Forest* by Paul Norman.

The music! The graphics! The atmosphere! I was totally blown away – this was the future and I needed to get on board this train pronto. At this point, around 1982, I'd made a little bit of 'splash cash' from VIC-20 and TI99/4A games I had written and so I shelled out for a C64

with a C2N cassette recorder and just threw myself into the manuals.

Of all the 8-bit machines I developed on, the '64 was the machine that I knew inside out, and back to front. It was the first machine that I got a proper understanding of how computer hardware



*Total Recall* loading using FREELoad.

worked ‘under the hood’. From that point I had the realisation that hardware and software go hand in hand; understanding either is great – understanding them both however was, and still is, the key to pushing the platform.

Outside of the actual games, I was developing a penchant for creating reusable core technology at Ocean, to the point that I was becoming more known for things like the Ocean Loader, SID music drivers and sprite multiplexing than some of the games (which, to be honest, isn’t a bad legacy when compared with a couple of the utter turkeys I put out)!

I always loved synthesizers and computer music – Jarre, YMO and Tangerine Dream were constantly blasting on the old Walkman! I loved trying to emulate the sounds of a Moog or a Simmons Syndrum with the SID chip; the only minor problem being I had the musical talents of a small rubber ball. I could get some great sounds out of the chip, but couldn’t compose anything! Serendipity was a fine bedfellow – whilst working at a computer shop in Wigan a frequent visitor was a chap called Peter Clarke, an accomplished musician and keyboard player in a touring band – we hit it off immediately with Pete showing off his technical prowess with Orpheus’ *Electrosound* music system. *Electrosound* was a nice little tool with some decent runtime modulators, but its playback code was so damn slow it was bordering on unusable in game code. So, I set about writing a player for Pete.



We briefly went into freelance business together creating music and sound effects for games (*Repton 3*, *Scooby Doo*, *Double Take*) with me providing the driver code and SFX and Pete creating the music and sound patches, ultimately ending up with us both working at Ocean – Pete initially working with Martin Galway and his driver and me creating the new Ocean driver following Martin’s departure.

I’d programmed several iterations of my driver as a freelancer, and then working alongside Martin I undoubtedly learned some neat tricks (I idolised him at the time) but my driver really came into its own once Gari Biasillo, Jon Dunn and Matt Cannon effectively specced out what they wanted it to do from a musical and aural point of view. Some of the sounds they got out of that driver are beyond me to this day! I scratched my head at some of the modulators they wanted, they just made no sense to my programmer brain – but the depth of sounds that came out... Oh my... The sound patches they created with them

*Mag Max*: Paul coded this game with graphics from Simon Butler.





Front-end developed by Paul for the Ocean musicians to debug their music.

were superlative, taking a state of the art sound chip and then adding layers upon layer of post modulation. Jon's idea for amping up my original syndrum code for example was bonkers, but boy did it work!

I created a nice compact data format with some very fast oscillators/modulators and general playback code, but it was Jon, Matt and Gari that took it to another level tweaking, changing and eventually writing new chunks of code to get the sounds they wanted. They were the real talent; I just gave them a platform to start showing their talents with – everything beyond that was all those guys.

The biggest pain in the ass with the C64 was its cassette IO – as the games started really pushing the boundaries and filling up the vast majority of the 64K of RAM the loading times were getting both preposterous and unreliable. Thirty-

*Combat School*: Paul coded the assault course, graphics by Simon Butler.

minute loading times soon became the norm, and as the cassette tapes carried more tape on the feed reel the more chance of load errors arrived as the motor strained to take up the tape.

Having seen Kingsoft's Turbo loader on *Revenge of the Mutant Camels* and then hearing Novagen's Novaload play rudimentary music during load I knew I had to write one of these things! This is where having a grip of the hardware and looking at the underlying ROM loading software paid off in spades. Little did I know that this was the start of what would come to be known as 'The Ocean Loader' with all its loading music, animated screens and scrolling messages.

Looking back, at the end of the day, I was incredibly lucky – I either worked with or was close friends with some of the finest C64 developers in the country – Dave Collier, John Meegan, Ste Ruddy and Andrew Braybrook to name but a few. We bounced ideas around, we shared code, we had a laugh and in the process we became much better programmers for

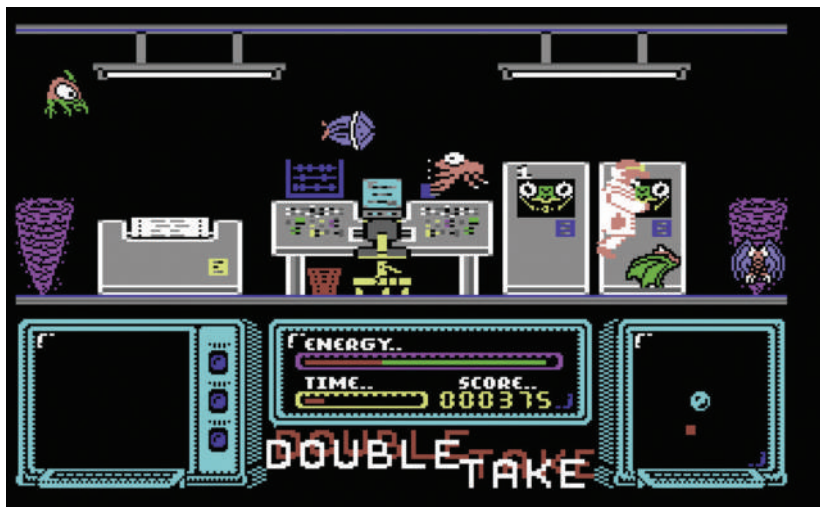


it. Many, many communications with Andrew Braybrook (by letter in those days and the occasional visit to Essex!) led to anti-freeze cartridge technology, my obsession with sprite multiplexing (which found its way into most Ocean games), and most importantly, the drive to aim for perfection – stable raster splits, smooth transitions, eliminating flicker, and 50 frames per second (or die trying!).

There was so much excellent C64 software out there by the late eighties to keep you on your toes – *Armalyte*, *Bubble Bobble*, *The Sentinel*, *Delta*, *IK+*, *The Last Ninja*, *Boulder Dash* – the list goes on and on – great games inspired you to try harder, to go one better with your next release

Over the years I was a big fan of Tony Crowther – you craved games by a person rather than a publisher back then – he could churn out slick, quality titles at a rate of knots like no other programmer – and he did his own bloomin' graphics too! How unfair was that! You just couldn't beat a good game of *Loco!*

As the nineties dawned, the death knell for the C64 was beginning – the 16-bit machines had arrived and the consoles were almost upon us. I'd developed a passion for real time 3D rendering and was keen to take the techniques onto the more powerful ST and Amiga. On top of all that Ocean had just



started NES, and Gameboy development – new shiny toys! With that, my C64 days came to a close in 1992 – it was a sad day, but the market moves on and all that deep knowledge becomes redundant as technology ups the ante. You move on and try to develop the same understanding of the next machine – and so it continues to this day.

What a stellar machine though – SID, VIC-II, CIA timers, 64K of RAM – what else could you possibly want? Halcyon days.

*Double Take*: Paul assisted Colin Porch by writing the music driver for this game.

Paul was brought in to help on *Operation Thunderbolt*.





## Paul Docherty

'Dokk' created iconic and memorable loading screens for many classic C64 titles – *The Last Ninja* and *Druid II* being his most iconic and celebrated images by fans.

I was into science fiction and arcade games as a teenager, so it seemed to me that computers were everywhere – Apple II's were installed in my secondary school, the Sinclair ZX81 came out, the BBC released their own home computer that was featured on their own TV show about computing and TRON was in the cinema. Computers were the future and the future was happening now, so I was keen to get a piece of it. When my best friend got a computer, I was given the leverage I needed to browbeat my parents into getting me a Commodore VIC-20 for Christmas – this was in 1982. That was the beginning for me. I learned to program and fell in love with gaming – the graphics on the VIC

though were a bit weak for what I wanted to do.

Later on I got myself a 1541 disk drive, and part of the reason I'd justified that purchase was because there was no doubt in my mind I was getting a C64. In 1984 I got one – I think it was another Christmas gift though I may have bought it myself with money I saved from my job as a paperboy.

In late 1985 I joined Compunet, the online community for C64 users. That opened up a whole new world for me. CNet had only been up for a year, so it was still a niche market. I was interacting with other C64 addicts all over the country – programmers, musicians, artists, gamers,

writers, and some assorted oddballs who didn't fit in anywhere else. It was perfect. Roosta, a friend of mine who wanted to get into the burgeoning demo scene, gave me a copy of *Paint Magic* so I could create an



IK+: the loading screen created by Paul for Archer Maclean's IK+.







image for this piece of music he'd made on the C64. I got into the demo scene with some guys who lived locally to me, Pulse Productions, and through them I met Graham Hunter, the programmer I went on to make a few demos with under the name 'Radix'.

During that time someone suggested to me that I could make money creating graphics for the C64, so I sent around a demo disk with images I'd uploaded to CNet. It wasn't until Zzap! 64 printed some of my screens in their Christmas '86 edition that my career really took off, though.

I worked in *Paint Magic* for single screen images and for creating background graphics I had a pretty sophisticated sprite editor that could overlay hi-res over low-res sprites, or

create 2x2 or 3x3 sprite frames, and then animate them in a preview window. It made sprite creation a real pleasure. There were plenty of challenges in creating graphics for the C64 – the biggest one was the revelation that the graphics chip changed at some point in '88 so that the grey was a darker shade and made the

*Druid II*: An iconic image for many C64 fans.

*Solomon's Key*: released by US Gold in 1987 and developed by Probe.





*The Last Ninja*: Paul's most celebrated image.

colour dithering I did for flesh tones, for example, look wrong on newer models of the C64. It was maddening.

I guess I would have had an easier time of C64 graphics if I had used a mouse instead of a Kingston joystick to manipulate the pixels!

At the time, I was addicted to side-scrolling shoot 'em-ups. I loved Bob & Doug's *Io*, and I was a big fan of Cyberdyne System's *Armalyte*. I also loved Stavros Fasoulou's *Delta* which was one of the main reasons I did some work for Thalamus.

Then there was *Sentinel* which I would play for days at a time

when I should have been working.

I admired Bob Stevenson and Hugh Riley for their graphics, definitely. I didn't admire programmers in the same way because they generally got paid more than the graphics artists and I thought that was ridiculous. I can see the other side of it now, but it created a dynamic I wasn't fond of working as a freelancer. As far as musicians

*Savage*: shooter programmed by Grant Harrison and released by Firebird in 1988.





The Commodore 64 opened up the world to me, which sounds corny perhaps but without it I would never have joined Compunet and found my peer group; I would never

*Flying Shark*: port of the classic arcade vertical shooter.

go I was a big Rob Hubbard fan, so when he did the music for *BMX Kidz*, the first C64 game I created in-game graphics for, I was thrilled. I grew to appreciate Martin Galway's music, especially when he got into using samples on the C64.

The game I am most proud of working on is definitely the C64 version of *Exterminator* for Audiogenic, a bizarre arcade game conversion that featured bodiless hands zapping all manner of creepy-crawlies as they marched towards you. I read at least one review of our C64 conversion that assumed the graphics had been digitized from the original arcade source files, even though I had rendered everything by hand on the C64 to take advantage of the characteristics of the graphics chip. That annoyed me, but Doug Hare, the programmer, did point out that I should feel proud I'd fooled the critics.

have travelled to the Commodore Expo in London and met even more people who admired my work; I would never have gotten a job that encouraged me to travel around the country to work with really interesting programmers. Plus I got to create graphics for a living, which had never been an option for me before the C64 came into my life. It was a ticket to a better future, which I can really only appreciate now by looking back and seeing how I got to be where I am.

*Hammerfist*: loading screen to a Zzap! 64 90% Beat'em Up.







## Steve Crow

After coding a string of top hits on the ZX Spectrum, Steve moved over to the C64 to produce the graphics for many highly rated titles.

**S**pace Invaders hit the UK in the late 70s and a lot of my friends were into playing it. However, I did not get into playing coin-ops until a few months later when Atari's *Missile Command* arrived at the Tonbridge railway station. It was here I waited for the train home from school and I was hooked, often missing my train home!

I think I wrote my first program on a teletype machine at school connected via a modem to the local college mainframe. Once I got the hang of programming I

wrote my first game on that 'system'. It was a simple destroy the tank coming towards you game – it was turn based with the position of the tank and your shot printed out on paper from the Teletype machine. My first introduction to home computing was at my friend Chris' house. His father had purchased a Sinclair ZX80 and we typed in some programs from a magazine or book. Just prior to that I had started taking computer science at school and had learned to program BASIC. A few months later my father helped Chris's father out

*Wizard's Lair*: Steve's original title on the ZX Spectrum - he helped with the sound engine on the conversion.



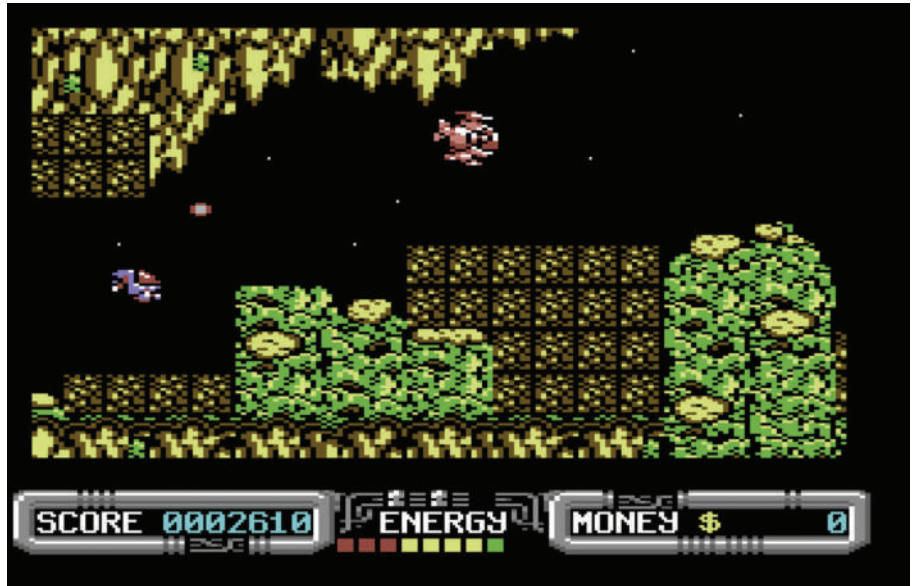
with a business deal and as a thank you he gave our family a ZX81.

Prior to that I had written a crude version of *Missile Command* on the school's Research Machine 380Z. So once I had a ZX81 at home I was going gang busters programming games on it. Later I got a ZX Spectrum and wrote my first published games for the Speccy. It was not

until *Wizard's Lair* was being converted to the C64 that I was lent one and programmed the audio and music for the conversion. My first and only Commodore was a C128 which I used for all the coin op conversions I created graphics for, whilst working at Probe Software.

I had always loved art so it was a natural progression to create the art for the games I wrote and also compose the music. However, back in the ZX Spectrum days you also had to program your own art package as none existed, at least none that were any good.

For a long time I never owned a C64 – I simply could not afford it when it first came out. But to me between the three main systems in the UK, ZX Spectrum, Amstrad and C64, the C64 was by far and away the superior machine. It had sprites, more colours, interrupts and it was possible to create full screen scrolling games. Its only weak points were a slightly less



powerful CPU and as I recall it had slightly less available memory – or was it that memory banks had to be paged in?

I am pretty sure the first work I did on the C64 was for the sound engine in the *Wizard's Lair* conversion to the machine. By then I would have been using a 80286 PC and I imagine Bubble Bus Software must have lent it to me as development hardware to interface to the C64. I don't recall any real challenges it was just marvellous to work on a machine that had a real sound generator!

I was definitely in awe of 'Ultimate Play the Game' at the time. I first saw the ZX Spectrum's *Pssst* at a computer fair in Earl's Court and was blown away by the smoothness. The Stamper Brothers were way ahead of other game developers. Even though my games were strongly influenced by some of theirs I never actually played *Atic Atac*, *Sabre Wulf* or *Underwurlde* – instead deriving my inspiration from

*Mr Heli*: Steve provided the graphics; Mark Kelly coded the game.





*Golden Axe*: the C64 conversion of the arcade hit. Title screen and game graphics by Steve.

pictures of the games in magazines.

My all time favourite C64 game is *Uridium* – many happy hours playing this amazing game from Andrew Braybrook.

The other games I loved on the C64 would form quite a long list. Firstly conversions of my original games from ZX Spectrum – *Wizard's Lair*, *Starquake* and *Firelord*. Apart from the sound engine the programming was done by someone else. I mainly helped with design consultation, graphics, music and sound. After that I worked as a graphic artist on various C64 conversions and C64 coin op conversions including: *Mr Heli*, *Golden Axe*, *Turbo Outrun*, *Chase HQ 2* and others.

I worked with some amazing programmers and musicians during this time including Mark

Kelly, John Cumming and Jeroen Tel. We were always working under intense pressure but there was great camaraderie and we always managed to have fun and a good laugh. I think the game I was most pleased with was *Turbo Outrun* with Mark Kelly. Mark was an amazing C64 programmer and between the two of us, mainly Mark, we came up with a way of showing a

moving pseudo 3D road on the C64. That was a huge challenge back then.

Of all of those early games I think *Starquake* is my all time favourite and the one I am most proud of. I just liked the play mechanics and the way the little robot player character moved.

The Commodore 64 was a fantastic machine – it is amazing the longevity of the system. Basically the C64 was the machine I started working on as a full time graphic artist and the last home computer system before moving onto consoles.

*Marauder*: Steve produced the graphics for this Hewson shooter.







128

CASSETTE

# Sound Studio

## Synthesizer & Home Recording Studio





## David Mowbray

Whilst at Tynesoft David contributed to a number of C64 titles including *Summer/Winter Olympiad*, *Para-Academy*, *Trolls* and *Turn N Burn*.

While I'd owned and played various consoles before, I'd never actually seen a computer outside of a TV show or movie and those were huge room sized things full of flashing lights and spinning tape reels. Like most people my age, my first experience of using a home computer of any sort was at school. Starting my third year I had a choice of subjects for some lessons; Computer Studies simply caught my eye. I was lucky enough to be in a school which had computers, four shiny new Commodore PET machines. Computer Studies quickly became my favourite subject and programming (as we were actually taught to program in those days) just made sense to me. Not owning

a computer of my own, I became part of a small group of people who started to spend unhealthy amounts of time playing with the school computers sometimes well into the evening and night. It wasn't uncommon to be thrown out of the school by the cleaners hours after the school had actually closed. Seeing a natural talent forming (and probably concerned about the amount of additional time I was spending in school), I received a VIC-20 for Christmas that year which soon gave way to a C64 the following Christmas – much to my delight. With the C64 came assembly language, hardware sprites, and a massive 64K in which to put these new and exciting things.

I've always been artistic and reasonably creative and as I've said, programming

was something we were taught in school that really clicked with me. Making games was something which just seemed to involve things I felt myself to be good at and soon after getting my first home computer and playing the games available for it, I started to develop my own stuff based on the games

*Turn N Burn*: David created this loading screen and the in-game graphics for this Tynesoft game.





I was playing. This eventually evolved into making my own bitmapped art as well. Because the games of that time were so simple, making a game didn't feel like an impossible task and once I moved over onto the C64 and into assembly language, I quickly started getting results which were of a similar quality to titles actually on the market.

I can still clearly remember the first time I physically saw a C64, it was at a friend's home and *Revenge of the Mutant Camels* was running. Compared to the PETs and VIC-20 I was used to, the C64 was magical! The sound and colours were incredible and the fast, smoothly animated graphics were unlike anything I'd seen before. Already firmly a Commodore fan, the C64 instantly became my must have computer – and I was lucky enough to get one. I'd seen and played with a ZX Spectrum, but being used to the Commodore machines previously I really couldn't connect with it – I think looking back a large part of that was the keyboard. The only other machine which turned my head was the BBC-B but frankly they were beyond my price range at the time so the



*Summer Olympiad:*  
The fencing event in this Tynesoft sports title.

C64 was the obvious choice really.

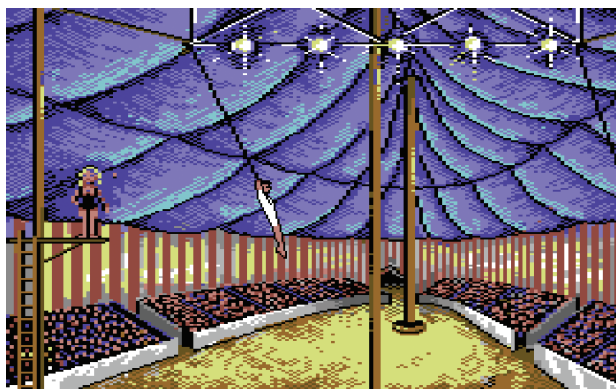
Programming anything in the early 1980s was very different to how things are now; even basic information was rare and quite hard to come by beyond what was in the manuals bundled with the machine (which was admittedly quite a lot).

Anything seen in a game was immediately pulled apart and many an hour was spent trawling through raw disassembled code to see how other people's stuff worked. That said, the C64 was a lovely machine to work on and once you had a core set of routines working you really could do pretty much what you wanted. I think this is one of the greatest strengths of the 8-bit machines compared to everything since, in that

you could focus more on the gameplay than managing the system or frame-rates – this I think really allowed some great games to be made on the C64.

Having had a VIC-20 before the C64, I was already aware and in awe of Jeff Minter, no one made games that looked, played or sounded

*Circus Games:* The trapeze event.







*Demon Blue*: The game that David is most proud of being involved with.

like his work. Moving over to the C64, games like *Sheep in Space* and *Ancipital* only deepened my love of his work.

Tony Crowther was someone who I also admired but probably my favourite C64 coder was Andrew Braybrook and his original *Paradroid* remains my favourite game of all time. Musically you're spoilt for choice with the C64 but I've always had a thing for *Wizball* and Martin Galway's music in that game.

I avoided reviews like the plague. I sometimes hear from people who have played games I've worked on and it's usually positive. I've spent a lot of time making children's and education games (everything from Peppa Pig to Doctor Who) and it's good to hear from the parents of children who played those about how much the games meant to

them. Other than this I'm really not interested as I'm normally too busy working on the next project and sick of the sight of the last one.

When I look back to my C64 days, I'm more fond of my time on the machine and the people I worked with than I am the games themselves. I'm someone who tends to look forward and I'm always happiest with what I'm doing at the moment than what's happened in the past as I tend to see the problems or the things I wasn't happy with. If I had to pick one of my C64 games that I was most happy with, I would probably say *Demon Blues* purely for the amount of colour I managed to get on-screen with that game. While I've certainly made better games since, I don't think I've filled a machine up as much as that game did.



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## Simon Pick

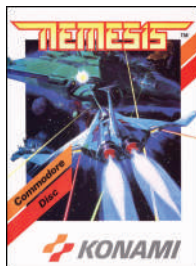
A prolific coder of a large contingent of great games on the C64 including *Nemesis* and *Shinobi*.

When I was about 10 years old, my father worked for a company that leased out mainframe time. He would take me around his office and show me the giant mainframes in their air-conditioned rooms. It was very impressive! One of his colleagues had an early Commodore PET sitting on his desk, it had a text-only adventure game. Playing this was simultaneously my first experience using a computer and playing a computer game.

In the early eighties I had a ZX80 followed by a BBC Micro. I had written loads of silly little games in BASIC on the BBC Micro, and would demonstrate them at the school's computer club.

One of my friends had a relative who ran a tape duplication plant and was thinking about becoming a games publisher. I took my collection of games along and the owner expressed an interest in an early version of a game involving someone in a wheelchair jumping over obstacles. They suggested I make it more politically correct and also re-write it in machine code. At this point I'd dabbled a little in machine code, but this gave me the push needed to create an entire game in 6502 assembly.

The tape duplication firm became Visions Software Factory and the game I was working on was released as *Daredevil Dennis*. It did pretty well and Visions asked



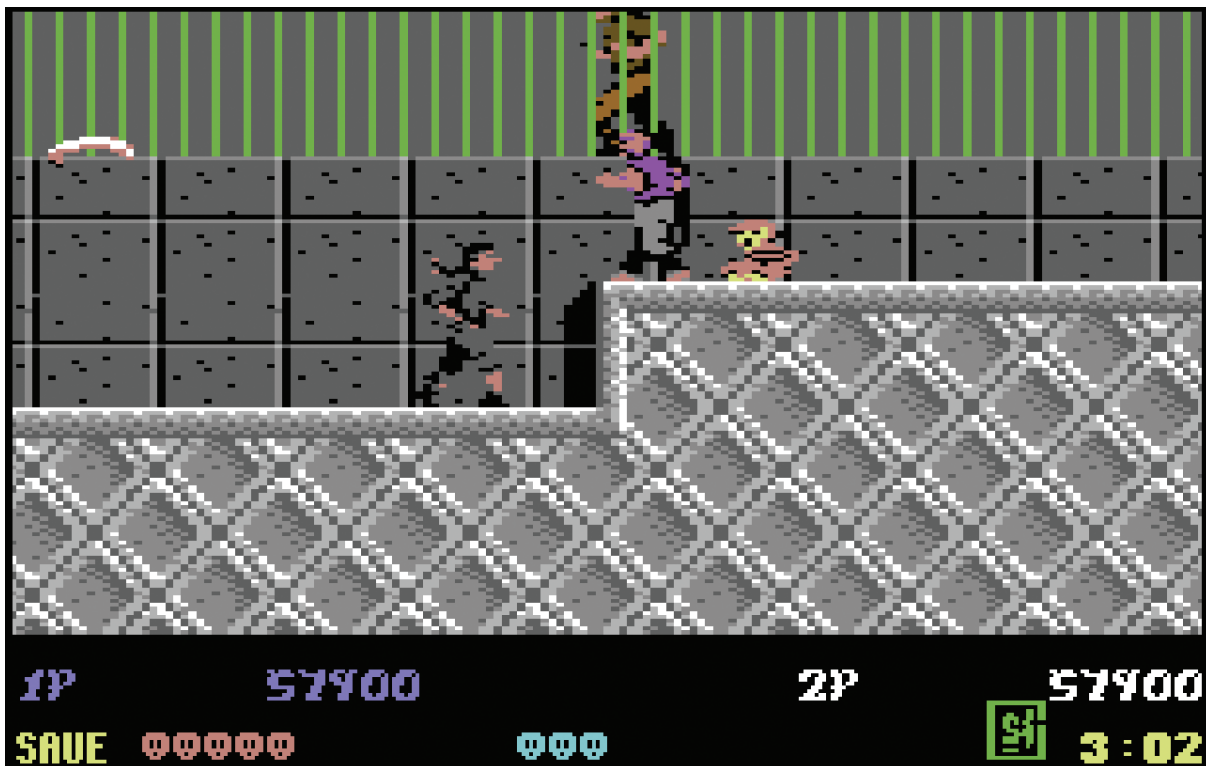
*Nemesis*: Simon coded the great conversion of this stunning arcade game.



me to write a version for the Acorn Electron, and then the C64. They shipped a C64 and assembler cartridge up to me and left me to it.

I had a play on most of the 8-bit computers, all of them seemed to have something missing. The Spectrum had





limited colours and terrible sound, the BBC Micro didn't have much memory, no hardware sprites and nasty square-wave sound. The C64 was the first that had a decent set of colours, hardware sprites, hardware scrolling and an amazing sound chip. You could line it up against the specifications of any other machine at the

time and it would exceed them in at least one way.

I used a commercially available assembler, to convert the vaguely human readable 6502 op-codes into code the C64 could execute. Apart from that I had to write all my own software tools.

For my first few games I programmed a

sprite editor, character set editor, a sound effect designer and music player. For some of the later games I made level building software, and even a tape loader at one point.

In the early days I would do everything, design and code the

*Shinobi*: A great conversion of Sega's arcade hit.



*Narc*: The first arcade conversion that Simon believes he did justice to.



*Indy Heat*: A tribute to *Super Sprint*.

game, make the graphics, sound effects and music. It was a lot of work, and frankly, I wasn't very good at the graphical side of things! Because I had developed all my own sprite-editors and standalone paint packages didn't exist, it never occurred to me that someone with a more artistic eye could create graphics for me.

Jeff Minter was doing amazing work when I was getting started. His sense of humour and colour-cycling madness was just superb. A little later I remember being totally blown away by Geoff Crammond's *The Sentinel*. I just couldn't believe a C64 could do it!

*Nemesis/Gradius* was the first arcade conversion I had worked on, and it had a fairly steep learning curve. There are a large number of hacks and cheats that I used to get the whole thing working, and it very nearly didn't work at all! I had initially created all the graphics, which looked terrible, so the publisher brought in Bob Stevenson to add some much needed artistic skill. It looked a lot better, but as Bob was late to the project he was forced to

work within the limitations that I had set. Had he been involved from the beginning it would have been a much more polished game!

By the time I got to *Shinobi*, I had a better idea of what I was doing. It involved a four-way colour scroll that was fairly state-of-the-art at the time. One difficulty was trying to fit the controls onto a joystick with a single button. In the end the controls worked but were a bit clunky. The graphics were created by Ned Langman – we both worked together on this from the start, giving the finished project more polish than my previous games.

*Narc* was good fun. This was the first arcade conversion where I felt I did the game total justice – everything from the original had been included and it was a really smooth development process. I was really pleased with getting the enemies to sink into the floor, the in-game scanner and getting the spray-painted letters appearing, all of which required real time modification of sprites, something I'd not done before.

My last C64 game, *Indy Heat*, was an easy development process. The game was really simple; a fixed bitmap and four cars with fairly trivial AI. I also wrote the music for the game, under the pseudonym (an anagram of my name) 'Mini Spock' – I was a keen hobbyist musician and really wanted to write some chip-music! The actual tune is a short loop, probably about a minute in length, which is a crazy short-time for how much development work went into writing a music-player from scratch!

Good times.



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## Grant Harrison

Programming the likes of *V* and *Chase HQ 2* for the C64 for Ocean Software – Grant also converted the Ultimate Play The Game title *Underwurlde* to the C64.

I was first introduced to computing by a friend of mine whose father was a maths teacher at the one of the local schools near Crowthorne – he used to bring home the school's Research Machine 380Z at the weekends for him to muck about on. I used to go and stay with him and watch him programming the huge beast; which eventually led to me trying my hand at it too. I remember us coding up a Star Trek type exploration game with a radar system where you had to plot in a course to fire lasers (or in our case asterisks) at the enemy ships which were actually just the letter 'H'. Great fun!

When I was at school there were

no computers so I had no experience or knowledge about them at all. However a brother of a friend of mine had a Commodore PET and had written a sort of multiple choice, dice rolling mini adventure game set in a dungeon, which he showed me one day, setting off my pursuit of further knowledge.

The option of buying a PET was way out of my budget so I opted after some time to get an Acorn Atom. I remember having to send the first one back as it didn't work (power supply I think). Once I got the second one powered up I was away! I spent many hours doing what a lot of us did in those days, typing in BASIC code,

saving to tape and running the program; which always failed a few times due to typos! Anyway I eventually decided to go a bit further and try out this stuff called machine code.... "wow, that is much faster", I



*V*: A game based on the rodent swallowing reptilian aliens that invaded Earth in the '80s.

thought, and so set about writing my own games. That was the start of many sleepless nights hooked on coding.

I then got myself a C64 – it was 6502 based and as I knew the language by that time it was the logical one to get. Oh, and the fact it had a decent amount of memory, sprites and a great sound chip. I'd also seen some of Jeff Minter's games running on one in Dixons and I thought that's the one for me!

I do remember writing a program that allowed use of the KoalaPad to create sprites and character sets. We used it a lot at Softstone, the company I worked at during the early 80s.

The challenge I had was trying to emulate what others were doing like raster split sprites, wacky sounds etc. I think I managed that in the games I worked on including *Chase HQ 2*, *Underwurlde* and *The Magician's Ball*. *Chase HQ 2* was a challenge to get the feel right and do justice to the original. I worked with Steve Crow on this, he did the graphics.

*The Magician's Ball* I loved and still do. It was an adventure with a great parser (even if I say so myself) designed by myself and Kevin Grieve who also did the music (Tubular Bells). I was amazed we got the licence to use it!

I was also pretty proud of *V* too. It was designed by the team I was part of at Softstone, which included Garry Knight, Kevin Grieve, Nigel Grieve, James Bowman and others. I know it didn't get



great reviews, but I think that was because the pass code system we used was just too obscure for players... a clear case of being too close to a project and not thinking of the end user experience I guess.

There was always a scramble to get the magazines when they dropped in the office to check out what had done well and what had not! I think there were always reviews that you were disappointed with, but then you picked yourself up and moved on – the reviewers actually did a great job and on the whole were pretty fair.

I honestly think that if I hadn't bought the C64 I would never have got into the games industry at what was a very exciting time. I just loved the way it had all the hardware that allowed it to overshadow the Spectrum (my opinion only) and people really pushed it to its limits (and still do).

Commodore have always produced great products be it PET, C64, Amiga etc... love them all!

#### *Underwurlde:*

Grant converted this Ultimate title to the C64.



## Darrell Etherington

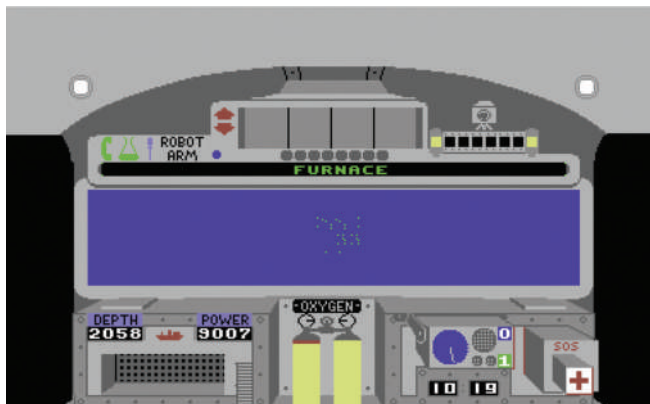
Responsible for some great unofficial arcade conversions at the time – *Cybotron* and *Skramble* are memorable ports of classic titles.

I got into computing through the school more than anything, we were lucky enough to have an old Rediffusion mainframe that we used as part of our computer studies, this was closely followed by Commodore PET's – yes the original green screen version. This was my first exposure and soon after learning BASIC I started to learn assembly language while at school. From here the infamous ZX80 followed as a birthday present and away we went: ZX81, Acorn Electron, Plus 4, QL, Commodore VIC-20 and Commodore 64 to name a few.

I remember writing a scrolling dodge 'em game on the PET in BASIC and got the buzz. From there I spent many evenings

self-learning with various computers but it wasn't really until the VIC-20 arrived with a full sized keyboard and great build quality that I really got going. I spent time developing some games and playing around with the VIC and then whilst on a holiday with the relatives I showed a *Space Lander* game I'd written to the guys in a computer shop in Winchester – they liked it and asked if I would like them to sell some copies. I went home and made 50 or so copies and to my surprise they all sold in a few weeks – I guess this was the beginning. From here I developed my skills further and became good friends with Andrew Glaister who was responsible for *Orbiter* (a version of *Defender*) on the Spectrum and

many other very successful titles including his more recent work on *Halo*. I met his agent and from there started working on a proper contract basis when I left school. This effectively became my full time job for many years, working self-employed via an agent based in London.



*R.M.S. Titanic: A game that gave you that sinking feeling.*



The C64 felt like the first 'real' computer that I owned. The VIC-20 was a challenge with its 3.5K of memory initially but when the C64 came along it was like heaven for a lot of the up-and-coming programmers around at that time.

The only real challenges I had with the C64 were the unreliable floppy disk units! For tools I wrote my own graphics package that allowed me to design fonts and sprites – it took a while but made life easier in the long run. For the programming side I used PDS which was a system my good friend Andrew Glaister had developed. This used an Apricot XI linked to an interface plugged into the parallel printer port of the Commodore 64 and made development and testing very easy. It turned out to be so successful that at one stage I was helping Andrew with building and developing the interface



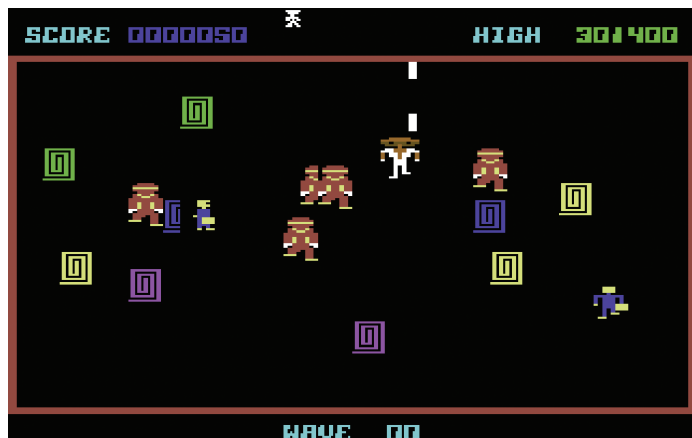
*Super Hang-On:*  
bike not included.

module software as opposed to making games. He went on to market this with the help of his agent and some other friends, so it became a development tool for more than just the C64.

I always admired my friend Andrew for his *Orbiter* game as we both used to play the arcade game a huge amount as well as on the C64. I used to love playing Jeff Minter's games like *Attack of the Mutant Camels* etc. They were unique ideas and not copies of arcade games which made them a bit special and good fun. On the music side

of things I used to love the audio and sound FX in Jeff Minter's games and also the guys who formed We M.U.S.I.C. (We Make Use of Sound In Computers) – they did some great stuff and worked with me on a couple of projects.

*Cybotron:* A tribute to a well known arcade game.





*Skramble*: A tribute to another well known arcade game.

Most of my games were for VIC-20 and C64. For the VIC-20 I did *Frogger*, *Krazy Kong*, *Cybotron* (version of *Robotron*), *Space Lander*, *Slap Dab* painter game. And for the 64, *Cybotron* a full version of Williams Arcade *Robotron*, *Space Lander*, *Ring Master*, *Super Hang On*, *Zarjaz Skramble*, a full copy of the arcade game *Skramble*, *R.M.S. Titanic*, *Dead Ringer*, *Jail Break* and a flight simulator I've forgotten the name of.

Most of the programmers I knew, including me, couldn't wait for C&VG to come out so we could look at the reviews. I guess sometimes they were harsh but generally they all seemed pretty fair. It was good to see the Top 10 charts and see how your game was performing.

The C64 was a very important and

memorable part of my life, and my career during the 80s. It was effectively part of my full time job and gave me lots of satisfaction providing a great platform to create all sorts of games on and for many hours spent playing games created by others.

It was a great stepping stone to my future career and learning low level programming such as assembler gave me a solid base and understanding to technology in general. From starting with games I've now progressed through several careers to become Head of IT Operations for Virgin Atlantic and continue to enjoy the challenges of technology.

Great days.

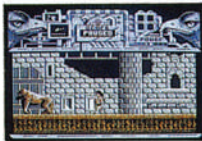
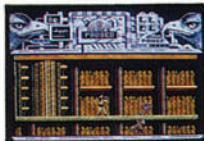




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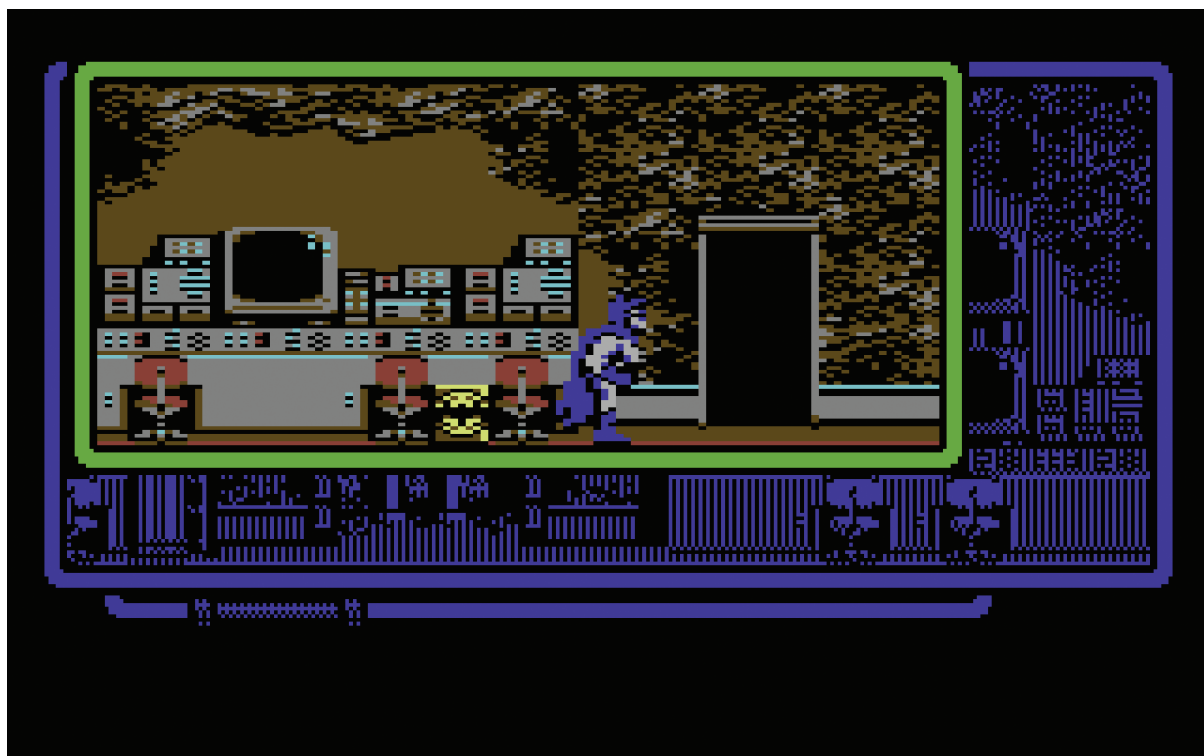
## Karen Davies

Karen produced the game graphics and loading screens for many titles for Denton Designs and Special FX. She also worked on Imagine's infamous *Bandersnatch*.

*Batman the Caped Crusader: Special FX*, published by Ocean Software.

I was introduced to home computing when I started at Imagine, before then I had never touched a computer. The first system I ever worked on was a Dragon, I think it was a piece of educational software, but I don't know if it was ever published. I was then put on the C64, and that was it, I became a C64 graphic artist. I never actually bought a machine for myself but I always had access to one at work.

I have always been into graphics from a small girl and always thought I would do art for a living. I earned a degree in textile design at Liverpool Polytechnic with Steve Cain's wife and so met Steve (*Shadowfire*, *The NeverEnding Story*, *B.C. Bill*). After leaving Poly I worked in Lyon France and then on to London, but I always remained in contact with the Cain family. I heard through Steve that a company in Liverpool





was looking to hire a computer graphics artist, so I thought why not give it a go. I moved back to Liverpool where I was lucky enough to get the job at Imagine, and so it began.

I was given a Commodore 64 to work on – it was never a choice. I was always happy to work on it though even with its chunky pixels. The C64 allowed me to work in colour with hi-res overlay sprites to give definition – what more could you ask for back then. Working on the C64 was very close to my textile training so I was always very comfortable with it.

The first tool I ever used was paper and pencils, which was fine – very portable, so it was easy to take work home.

All of the graphics were then drawn on in-house utilities, the beauty of this was that the graphics would usually slot

into the game quite easily and I could see if they worked or not – the more negative aspect of using these tools was that they sometimes had bugs and losing your morning's work was not fun.

Then there was the KoalaPad, a must for loading screens and wonderful for trying out image ideas – also it was probably the closest you could get to

*Enigma Force: Special FX*, published by Beyond Software.

Loading screen produced by Karen for Ocean's *Firefly*.



feeling like you were actually drawing. I may be wrong but I think an in-house utility was made where I could draw game graphics with the KoalaPad or maybe that was just wishful thinking from back then.

I was never a gamer so I was never really inspired by how games played – I did see other games and I was impressed by game graphics, not only the drawings but how an artist had overcome the problems I recognised in my own work. I remember *Lemmings* and *Abe's Odyssey* – I liked the graphics in those games but I remember them mostly because my son liked them and I bought them for him to play.

At the time I don't think I had a C64 hero as such – looking back I have incredible respect for Steve Cain, as I said he brought me into the industry and he was a brilliant graphic designer and

illustrator as well as an all round good guy. I also have incredible respect for Jonathan 'Joffa' Smith, again a brilliant games designer, programmer and graphic designer – he just knew games and he was always incredibly generous with his talent. I was very lucky to work with both of them, actually I would say I was very lucky with most of the people I was fortunate to work with – John Gibson was a legend (or so he told me ) Ian Moran, Ally Noble....the list goes on and on.

The main challenges on every game were always time and memory. However long we were given we always needed that little bit more time because we always wanted to put that little bit more into what we were working on, or redraw something. The limited memory of the C64 proved challenging – I always wanted

*Hysteria*: Coded by  
Tony Pomfret with  
graphics by Karen.







more memory and most of the time the programmers were very good and would squeeze every bit of memory out of the system for me to do what I wanted to do, or at least that's what they told me and I believed them (I think they wanted a quieter life).

The games I am most proud of working on are *Shadowfire*, *Frankie goes to Hollywood* and *Batman the Caped Crusader* – I can't pick just one as I am proud of each one for different reasons.

Usually I was very relieved if I got a good review, not overly shocked if I got a bad one, but I think I usually knew if it was not going to be too good....I can't think of any that I thought were totally off the mark, or maybe I have just blanked them out.

I was involved with the C64 at a very exciting time in the games industry – it was all new, it was an up-and-coming industry and was very different to any work environment I had ever worked in. It was a fun time, long hours and hard work but fun.

It is a time I remember fondly.

*Frankie Goes To Hollywood*: stylish homage to the 80s group.

Loading screen for Ocean's *Short Circuit* movie licence.





## Gary Penn

Editor of Zzap! 64 and subsequent winner of the title 'Gaming Legend', Gary talks about how he fell in love with the Commodore 64.

I can't remember a time when I wasn't interested in games and technology. I'm a playful tinkerer and maker at heart so computers give me the scope to do both with little hassle and no risk. No idea which computer was the first I ever used but the Commodore PET would have been among them.

Consoles – well, 'TV games' as they were called then – were uncommon on the housing estate where I grew up; computers were rarer still. But that didn't stop me obsessing over what I couldn't have, ogling adverts in magazines like Personal Computer World in our local WHSmith.

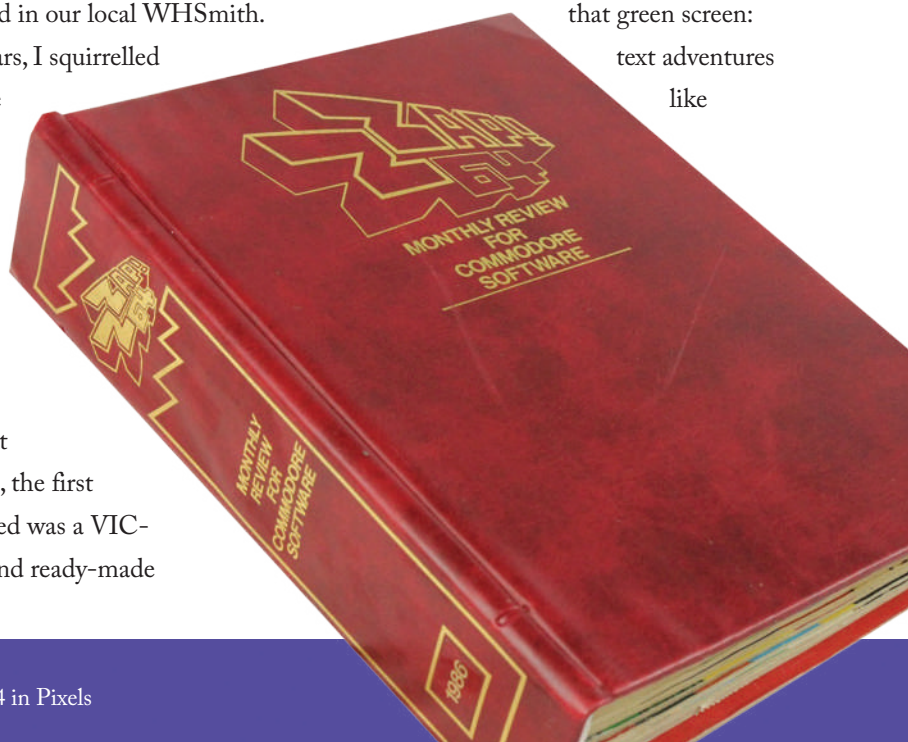
For a few years, I squirrelled away every spare penny with a view to one day buying a computer, but the most affordable ones were Daedalian nightmares in kit form. In the end, the first computer I owned was a VIC-20. It was new and ready-made

but not cheap so I had to bargain with my parents to combine the value of my birthday and Christmas presents with my own savings – and the usual promises of using it to help with school work. I earned most of my cash from taking on so many different newspaper rounds – mostly hundreds of those thick free ones delivered to every household in town.

I aligned with Commodore instead of, say, Atari – which was more expensive – or Sinclair – which was much less expensive – not least because my friend's dad had a PET. Ah, we played some fine games on

that green screen:  
text adventures  
like

A Zzap! 64 binder bursting with magazines.



*Colossal Cave* and arcade games like *PET Invaders*, with its cool 'keyboard graphic' interpretation of Taito's original pixels. I figured I could more easily convert my PET favourites to the VIC but that never came to pass; I ended up using magazine listings and writing my own games and tools instead.

Even though it had even less memory than a hamster, I loved my VIC-20; the scope to POKE and SYS and dramatically affect the screen; the meaty audio so much more than the beeps and squeaks heard elsewhere. Not that that stopped me playing with other computers – everyone I knew who owned a computer seemed to have a different make and model and any prejudice I might harbour was obscured by the fact that every computer seemed to have something unique worth playing on it.

After two lovely years I sold my VIC and put that cash towards the cost of a Commodore 64, which felt like a logical step. I was a little disappointed by the 64 when I started using it; it was somehow less... substantial than the VIC but still more robust than the Sinclair computers. I think I was just too familiar with the chunky 22-column display and the feel of the keyboard. Mind you, the tape loading times were horrendous, too. You could wait for an hour for the biggest games to load from tape only to have it bomb out before it'd finished.

I stopped making games and instead only played them – any games I could get my hands on and on any platform, but mostly on the Commodore 64. At first



there were a few of us sharing the games we'd bought, but that group soon grew to include people who knew people who had American games on disk, which opened up a whole new seam of delights.

Trouble was, I found the more I played, the more intolerant I became with anything that wasn't as good as the best or simply unusual enough to capture my curiosity. That said, if I liked a game, I really liked it and I'd play it to death; games like *Jumpman*, *H.E.R.O.*, *Fort Apocalypse*, *Encounter*, *Ancipital*, *Impossible Mission*... "Another visitor. Stay awhile. Staaaay foreverrrr!" Man, the first time I heard that speech... Wow.

In 1984 I sent some of my best C64 game scores to a magazine called Personal Computer Games and was picked to enter a competition to find Britain's best gamer. Five of us were invited to compete against each other playing five new games at the PCG offices in London. I can't remember who won in the end but I think Jaz came second and I was third; the magazine was shut down before the results ever saw the light of print.

Gary, 2nd from right, with the Newsfield crowd.





A selection of  
Zzap! 64 covers.

Right: Issue 14, June  
1986 with Gary on  
the front cover.

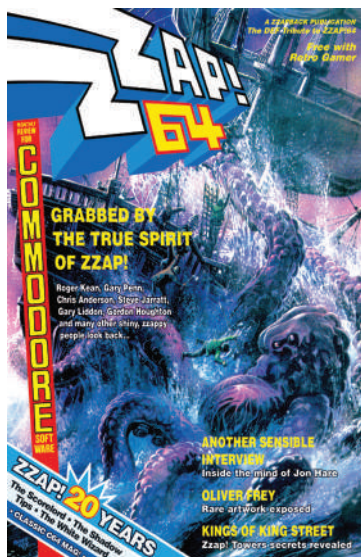
Not long after PCG folded, its editor, Chris Anderson, called me out of the blue to explain the situation and revealed he was looking to launch a new magazine – something different – and wondered if I'd be interested in meeting him to talk about it. Heh. Of course I was. What teenage nerd wouldn't? After a casual interview

in a pub I ended up doing a test review of Epyx's Summer Games – without realising there were others in contention for the position and the next thing I know, I'm leaving home to move down to Yeovil to work on this new magazine. My first

proper job.

I don't think I found out it was called Zzap! 64 until my first day on the job. To be honest I didn't like the name at all – and that feeling was compounded by the confused reactions from some companies when we told them about this radical new publication and asked for details about unreleased games or review copies.

It was a difficult time. I was far from home, independent and had little to live on – certainly less than I'd been earning doing manual labour that summer after spectacularly failing all of my A levels. Working on a magazine – not just seeing behind the curtain but being there, working there... it was all so... different; there was so much to do. I rarely slept. But usually none of that mattered because I was so consumed by what I was doing. It felt magical. Was the Commodore 64 the best 8-bit computer? In terms of the joy, satisfaction and opportunities it gave me: oh yes!





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OLIVER  
FREY





## Marc Wilding

Among the many other games on his long portfolio, Marc worked on *Manic Miner – The Mega Tree* with Matthew Smith and Stuart Fotheringham on the C64.

Unfortunately, the game never got released.

Well I started very early when my dad brought a computer home from work. I have no idea what it was but I noticed it ran BASIC. Dad had some books, so I taught myself to code. This was when I was 12. By the time I was 14 I was pretty competent in the language. Our year at school was the first year to do Computer Studies as an 'O' level option. I took it! In my first lesson I told the teacher I could code in BASIC, which he did not believe, so I showed him what I could do. I was already at that point miles ahead of him. He was a maths teacher who was learning computing at night school only a couple of months ahead of what he was teaching us. He said I could spend my time in the computer room. We

had a punched paper tape terminal linked to Crewe University. I wrote *Monopoly* on that!

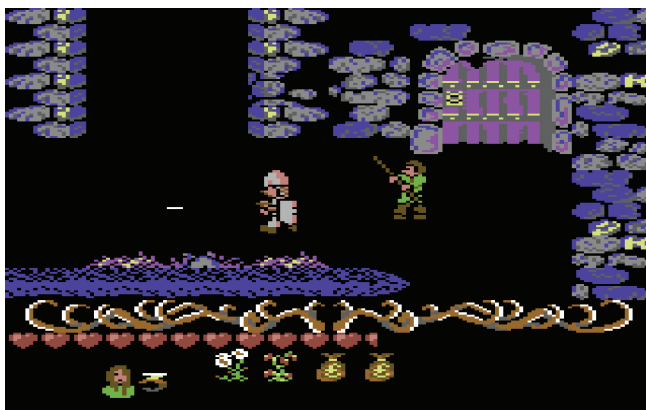
My dad then brought home a Commodore PET and at school we had a sponsored swim and managed to get an Apple II. After learning to code both in BASIC, I soon discovered that both used 6502. So I decided to learn that. One of the first things I did was try to disassemble *PET Invaders*. It was challenging at first as I had no idea that there might be chunks of code with bits of data in between functions, so I spent ages wondering why it suddenly made no sense. I wrote a simple Star Trek game in assembler on the Apple II. Basically a big 'SS Enterprise' to the left of the screen, shooting 'Klingon' ships on

the right. Very simple, but my first assembly language game.

My great gran had left me some money which I got when I was 17, so it was straight out to buy a VIC-20 with a cassette deck; 16K of add-on memory and *VIC Invaders*



*Robin of the Wood:*  
Credited to Marc Dawson (Marc's adopted name) and released through Odin.





(I always loved *Space Invaders* – I could lap the clock as a kid).

I left school and went to college. Again the A-level course focused on really simple coding concepts and I was deep into assembler at that time.

While I was at college I wrote *Ghost Trap* that was published in C&VG, for the VIC-20. I left college and started to work as a coder for a business software company called 'C-Star Computer Services' where I worked on a piece of software called *TIC-TAC* or *Totally Integrated Computers of Turf Accountants for Bookmakers*. This was on the Commodore PET and newly released Commodore 64.

My love affair with the C64 started with the Commodore PET, then VIC-20 (and also the Commodore 700 and 500 which were two other models mainly aimed at business software and pretty much Commodore PET computers in a different case). But the C64 was where I really could produce some cool games. I had nothing against other 8-bits. I loved the Atari 400/800. The games were amazing! And I also coded on the TRS-80, Video Genie,



Sharp MZ-80K and Act-Sirius. But the C64 was where I plied my trade.

One day I saw an advert for programmers for Imagine Software in Liverpool. So I thought why not, let's give it a pop. Next thing I knew I got my dream job. And it was a dream. It rapidly became my life. I worked on *BC Bill C64* and then onto the third Imagine game which was based on *Star Raiders* but with trading (a couple of years before *Elite*, but to be honest I doubt it would have been as good). But that was me then. I was a Commodore 64 game coder.

We developed on a Sage IV at Imagine and downloaded to the C64 to execute.

*Stairways*: A slightly odd game where you can play as Matthew Smith!



This was a pretty advanced development environment for the time. When we moved to Software Creations and Odin we used BBC Micros with a second processor pack and again downloaded to the C64 to execute. Debugging was still

*BC Bill 64*: Released by Imagine, a game where capturing food and feeding your family is your challenge.



#### *Nodes of Yesod:*

Graphically similar to its Spectrum cousin, Marc helped with the programming on this game for Odin in 1985.

done via the built in assembler though.

All my early games are credited as Marc Dawson (that was my adopted name, I reverted back to my birth name in 2000 – a long story I won't bore you with). This means a large chunk of my game credits are in the name Marc Dawson during the period 1982-2000 and then Marc Wilding 2000-2009 when I left the industry.

The games I developed in order are:

*BC Bill C64* – A real learning curve for how not to write games. I look back at the code in this and hang my head in shame, but it was fun! Artwork was by Steve Cain and Ally Noble, music by Fred Gray.

*Manic Miner* – *The Mega Tree* – A game sadly never released. I was working with Matthew Smith trying to create something new and exciting. Unlike the previous *Manic Miner* games, the

C64 was the lead platform for this game. I was coding whilst Stuart Fotheringham produced the artwork. We worked from a house in Birkenhead and literally lived there while making this game. My lasting memory of this period of work was 'The Rocky Horror Picture Show' being almost on continuous cycle throughout development. The core of the game was a huge tree in the middle of the screen. It was to be isometric and we had lots of little trees running after Miner

Willy, reminiscent of the Wizard scene in *Fantasia*. Unfortunately Matthew just could not settle on what he wanted for this game, so after many re-writes, Stuart and I left to join Odin Computer Graphics.

*Stairways* – The less said about this the better. It was based on a night out at a heavy rock club in Birkenhead called *Stairways*. A place I regularly frequented along with Matthew Smith, Stuart Fotheringham and Steve Wetherill. Artwork was by Stuart. Music again by Fred Gray. Destroy the hallucinations

*Scary Monsters*: A haunting game that has you chasing monsters. The game was released despite being incomplete!



with thought blasts, while keeping yourself stocked with beer and burgers and avoiding glasses strewn all over the floor or the bouncer would kick you out. Backed by Heavy Rock music. Well I was young!

*Nodes of Yesod* – I worked with Robbie Tinman on this project. It was a team effort between coders Steve Wetherill (Spectrum, Enterprise), myself and Robbie Tinman (C64), Stefan Walker (Amstrad CPC) and the artists, Colin Grunes – Lead Box Artist (Spectrum), Paul Salmon (Spectrum) and Stuart Fotheringham (C64). Music was by Fred Gray.

*Robin Of the Wood* – Again a team effort. Spectrum code (Steve Wetherill), C64 (Me), Art lead on this one was Paul Salmon, C64 Art by Stuart Fotheringham.

*Mission AD* – This one was only produced for the Commodore 64, by myself with artwork again by Stuart Fotheringham. It started life as Terminator as we tried to get the license for the game, but was changed to a completely different game when we did not succeed in getting it. I think the source code I have is still in a box with Terminator written on it.

*Hypa-Ball* – This was very loosely based around a comic strip in 2000AD called 'Harlem Heroes'. I led on the C64 version with the Spectrum version coded by Dougie Burns with some assistance from Steve Wetherill. The artwork was created by Andy Rixon and music by Keith



Tinman.

*Scary Monsters* – Inspired by the Hammer Horror films and also the album 'Scary Monsters & Super Creeps' that I was listening to at the time. Unfortunately time constraints on this project meant the adventure side of it was incomplete and a bit boring. I had an initial three month timeframe, cut to two months to complete a contract – but the internal bits were fun. You had to find the right method of destroying the relevant monster. A stake for Dracula, a silver bullet for a werewolf etc. Again this was C64 only and artwork was by Andy Rixon & Music by Keith Tinman.

After this I moved onto the ST & Amiga. The Motorola 68000, now there was a processor!

The C64 represents my youth, my wild child years where I coded, I drank, I partied and I coded some more. I almost lived in work (when I was not partying!) but my party buddies were all my work colleagues. We were all doing what we loved and we pretty much lived for it. Very, very happy memories.

*Hypa-Ball*: Loosely based on 2000 AD's comic strip 'Harlem Heroes'.





## Jacco Van 't Riet

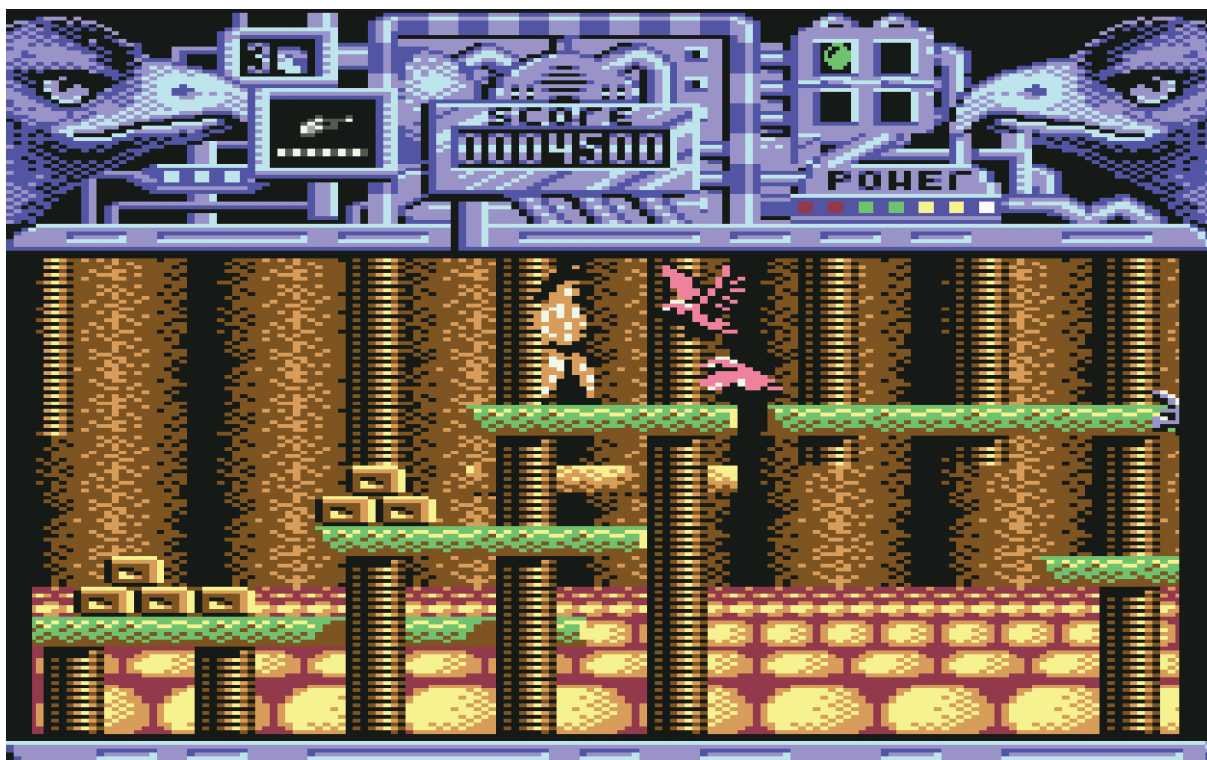
Jacco was part of a team called Boys Without Brains that gave C64 gamers the classic titles *Hawkeye* and *Flimbo's Quest*.

*Hawkeye*: Three years in the making, featuring spectacular parallax scrolling and classic Jeroen Tel music.

A friend took me to the museum of education in The Hague when I was about 12 years old and I educated myself in BASIC on a Commodore PET. The same friend got a VIC-20 later on and I kept on saving up as a newspaper boy and worked for the local milkman to get myself a C64 in 1983. It took me one and a half more years to save up for a 1541 drive and from then my

'career' on the 64 took off.

I was always good at drawing, I was a graffiti artist back then and started to draw in *KoalaPaint* on the C64. One of the first things I did was a picture of Madonna which a local programmer turned into the *Madonna Demo*. I contacted Barry Leitch (The Jackal) for the music. In the same period I was asked to join a graphics demo group called 'The Boys Without Brains'



(BWB) and I went to graphic arts school in Rotterdam. I was the only pupil back then who knew how to draw on computers.

The C64 was simply the best 8-bit computer. The Spectrum had no user base in Holland and in my personal opinion the C64 really was the best machine and offered the best graphics.

I used *KoalaPaint* with my Arcade joystick, but Mario (the programmer of *Hawkeye*) made specialised editors which were really designed for me; he tweaked them until I liked them. As a team (BWB) we've always put a lot of effort into our editors, and with the unique parallax scrolling we had in *Hawkeye* and *Flimbo's Quest* it was really necessary to do so.

Producing graphics on the C64 was often a challenge, mainly due to it having only three colours per character and a limited colour palette. Mario was a magician with swapping memory around which gave me, as an artist, the maximum freedom possible within the boundaries of the 64K available.

The big Commodore 64 projects I worked on were *Hawkeye* and *Flimbo's Quest*, I did work on some smaller games also, namely *Heli Rescue*, *Super Trucker* and *Rollerboard*.

*Hawkeye* had the most challenges as it was our first game and it was a two to three year project. *Hawkeye* was quite ground-breaking at the time and set a new



standard for sideways scrollers. The game graphics, design and ideas were mine and I dare to say that I was the cement of the group; it's hard to keep a group of 14-17 year olds motivated for three years (on zero money!) and I learnt at the time that I'm really good at that.

To get access to the reviews of my games was not always easy in Holland. But yes we were always nervous when our babies were getting judged. But by the time the games were finished you actually didn't care anymore. You just wanted the 'damn' thing out to market!

I liked most of Tony Crowther's games, Stavros Fasoulas' games and David Crane was also one of my heroes. Though my favourite game is *Boulder Dash*.

The C64 meant a lot to me. It gave me fun; it gave me my best friends; it gave me the possibility to travel and learn other languages; it gave me a start to a successful career and it also taught me that business is hardly ever fair and that greedy 'businessmen' will take advantage of you.

#### *Flimbo's Quest:*

More great parallax scrolling - Jacco and Arthur Van Jole created the graphics.



## Archer Maclean

*Dropzone* and *IK+* put Archer firmly on the 'gaming' map with huge titles to follow on the Commodore Amiga.

*IK+* is regarded as the best fighting game on the C64.

As a child of the 70s I was fascinated with electronics rather than Action Man puppets or Scalextric. Before I was even into my teens I was building lots of weird gadgets to alleviate the boredom of school Latin lessons – such as putting a tiny radio into a matchbox with a crystal earpiece or an electronic doorbell that played horrible tinkly tunes, then a metal detector and so on. By about 1976-7, I was beginning to move into some quite complex devices, like a handheld digital oscilloscope that had a real live LED matrix display. I reused that for a school O-level project a couple of years later! I also built a couple of kit-based things like a primitive Sinclair MK14 microprocessor, a Sinclair Wrist Calculator. But by mid 1977 I was yearning to build an entire Nascom-1 'proper' computer, programmable in machine code, or for £100 you could buy an 8K ROM based BASIC interpreter. Progress eh? Anyway, I ended up building loads of Nascom computers and sold them to teachers at school.

But this was all about six or seven years before I bought my first C64. That's an

eternity in 'technology terms'.

Earliest memories of getting into programming stem from a 1976 'computer club' run by the school maths teacher. We'd sit there with an ICL punched card machine and create very simple Fortran programs and send them off by post to the regional computing centre. By post! About a week later we might get a giant printout with a result, or it would say 'syntax error, execution aborted' and you'd have to start over. Also, I bought a very early Texas Instruments SR-56 programmable LED calculator with 100 bytes of memory into which you could cram a small maths program, like a Quadratic Equation Solver. I still have that too. It was extremely good at teaching you how to write very compact, well ordered programs that proved to be invaluable when it came to writing games.

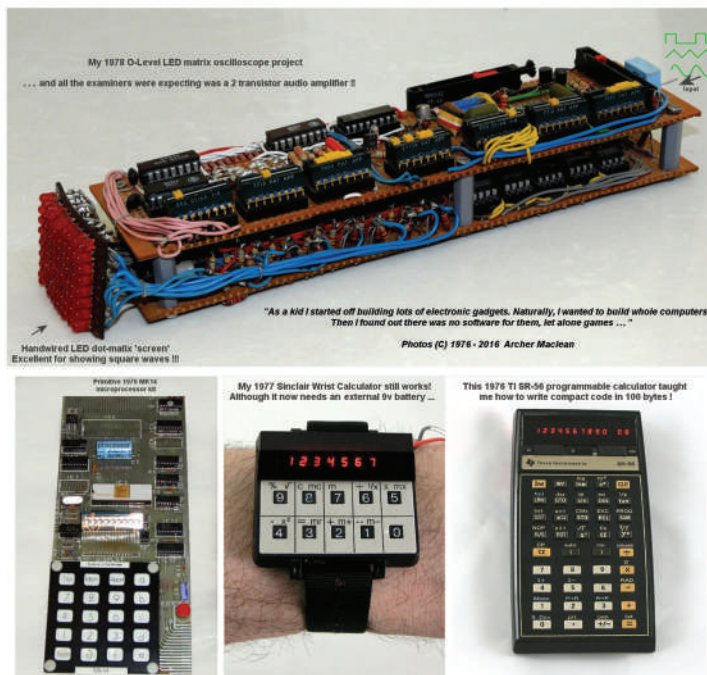
Anyway, it was all very well being able to build a whole computer .. but then what? There was next to zero software available to make it do anything. Nada, zilch, zip. So if you had got that far, and made it work, you nearly always ended up writing your own simple programs. At about the same time, the 1978/9 arcade-game fad



was growing fast and I'd always been into them since a *Pong* moment in 1972. But by 1978/9 the country seemed gripped by *Space Invaders* fever, so I naturally wanted to write my own version. The first game I remember writing was a simple top down driving game, a bit like Atari's primitive *Sprint-2* arcade racing game, and I called it *Death-Race*. You inevitably got splatted as the game speeded up, and it would draw a small tombstone in the middle of the road before scrolling off the screen.

By then the home computer market was beginning to move real fast, especially with anything coming out of 'Silicon Valley'. By late 1979 I was lusting after an Atari 800, having been blown away watching *Star Raiders* being demo'd at a computer exhibition.

As soon as I got hold of one I realised there was some magic extra hardware inside the machine as it was clearly doing things with graphics and sound that no humble 1.7MHz 6502 could ever do on its own. At the same time I was becoming more and more addicted to arcade games, including *Missile Command*, *Asteroids*, *Lunar Lander*, and *Defender*. Even though I was shipped off to Uni in 1980, I found the time to figure out how to program the Atari in machine code and exploit the secret hardware accelerator chips that were within it. I started writing what became *Dropzone* as early as 1981, but doing a degree did stop me from finishing it for a couple of years, and it went through dozens of minor revisions. There was even a deleted scene where the 2D side-on view would swivel



around and look into the screen at things coming towards you.

Archer's early gadgets.

In 1984 I went along to a games show and a certain company called US Gold had a big loud stand and were showing off all sorts of US imported games. I sidled up to one of their Ataris on display and put a disk version of *Dropzone* in and stood back to see what would happen. Sure enough a decent crowd built up blocking the aisle, and people started asking the stand staff if they could buy it there and then. Needless to say, someone from the company came out and took it down at which point I walked up and introduced myself!

Anyway, a deal was done but only if I could produce a C64 version as US Gold demanded it. I said, sure, no problem. But I didn't actually own a C64 at the time, although by then the C64 was THE home computer to have, so on the way home from the show I discreetly bought a C64,



*IK*: A time when two fighters on the screen were enough for most gamers.

a cassette drive, and 1541 floppy disk drive and then set about doing the *Dropzone* conversion in record time.

I did have a hell of a lot of problems making it run fast enough though. The main reason being that the Atari had genuine hardware scrolling of any scan line in any direction to the nearest pixel with data starting anywhere in memory. This single feature meant that the processor didn't have to clear and re-plot the screen every time the sideways view shifted and instead I only had to re-plot aliens if they actually moved. The C64 adverts boasted how it had hardware scrolling but this was a bit of a con because it could only shift the screen by up to three pixels left or right at which point you needed to do the conventional thing or either clear/re-plot the entire screen or copy the entire screen one character width left/right instead. Doing that on the C64 gobbled up loads of clock cycles, so I had to cut back on other things like the amount of active aliens, and to compensate for this I made them a bit faster and nastier.

After a couple of exhausting months, I

delivered the finished C64 *Dropzone*, only to be asked if I could 'whack out a ZX Spectrum version', which sadly was out of the question without stripping it back even further.

I only produced three games on the C64, doing all aspects of them except music. These were *Dropzone*, *International Karate* and *IK+*. *International Karate* was also known as *World Karate Championship* in the USA, and *IK+* was renamed *Chop n' Drop*. There's a whole book's worth of stories surrounding those last two including how *IK* ended up defining the 'look and feel' laws in the USA in the late 80s.

In order to write *IK* as quickly as possible, the most obvious thing to do was to adapt the proven *Dropzone* 'game shell' to save time, by stripping out the space-stuff, and then building the karate code to replace it, so that it at least loosely resembled the ZX Spectrum game it was supposed to mimic. The game-shell was the background code that deals with all the housekeeping functionality like vertical black interrupts and timing, keyboard input at hardware level, sound chip drivers at hardware level, certain graphics hardware interfaces etc. In fact *IK* has quite a bit of redundant code from *Dropzone* still in it!

*IK* was done on the Atari 800 first and was a major challenge as to how to get five colours out of a 2-bit pixel, so the 5th 'layer' was done using the Atari's player-missile graphic system (roughly similar to sprites on the C64) overlay on a bitmap graphics, that in turn were made up of character-blocks! Unless you're familiar with



# UNRUPZUNE







The C64 version of *Dropzone*, Archer's first game on the platform.

character-set techniques and PMG layers, the advantages of that lot would be hard to explain right now.

*IK* was far easier to do on the C64 due to the way the sprites worked. *IK+* was more of a challenge due to the three players and everything else going on. *IK+* could not have worked on the Atari without some compromise in the way the three men were drawn.

I pretty much did all aspects of all

the games, except for the music.

*Dropzone* didn't have any, other than a background spacey 'rumble' going on, but there was so much SFX at the higher levels, it would have got annoying to have music blaring out as well. The superb music for *IK* and *IK+* was done by Rob Hubbard on the C64 and Dave Lowe on the Amiga.

I am amazed that the *IK* game music is today played by whole orchestras with the games projected onto a screen behind the stage, and that there's dozens of remixes out there too, some of which sound superb. I've converted some to MP3 so I can play them in the car!

Looking at the reviews was kinda like getting exam results after all the hard-work. As for review scores, yes mostly the reviews scores and comments were very rewarding. But there's always some 'rad' reviewer looking to make a name for himself with 'attitood', by picking on some tiny aspect and exploding it, or just completely missing the point.

I really enjoyed all the fun of meeting up with other games writers at the time, the friendly rivalry, the geeky competitive side of who can write a demo with the most interlaced sprites on one horizontal line whilst hammering the SID chip and filling colour registers twice on one scan line with only 64 microseconds to play with before the next scanline interrupt comes along.

Aah, the good old days !

Archer, Jeff Minter, Andy Braybrook, Gary Penn, Tony Crowther, Chris Butler and Julian Rignall.



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## Robin Levy

As well as creating the graphics for the acclaimed *Armalyte*, Robin was responsible for the graphics in many more iconic titles, including *Last Ninja 3* and the loading screen for *Hawkeye*.

I loved my C64, for better or for worse, that nicotine coloured box with the buzzing power brick, obese pixels and cause of many arguments over hogging the family TV had a huge effect on my life: the C64, and to a lesser extent its older brother; VIC, enabled my imagination, connected me with like-minded people and helped define a career for me as a designer, artist, animator and musician.

But I'm getting ahead of myself.

I have always had a passion for things that don't exist; as a small boy I would be captivated by comics, film, book covers, cartoons, and TV that featured SF or fantasy. The process of visualising and bringing to life scenes from the imagination fascinated me and I knew from

a very early age that I wanted to be like the artists, model makers and animators I admired so I spent hours creating my own concepts and stories.

I also had a fascination with technology and how things work.

I think the first video game I ever saw was a neighbour's Binatone TV game and while I was entertained I didn't see the creative potential of the games medium until I saw my first arcade game; which I am sure was Space Invaders. At that time it must be said that I was equally taken with the cabinet artwork and the amazingly evocative sound as I wasn't quite tall enough to get a clear view of the screen.

In the years that followed I would start to see more games everywhere, from

local chip shops to petrol stations, I relished going to the seaside in the summer and looked forward to stops at service stations so I could visit the arcades, soaking in the atmosphere of synthetic light and sound. I was hooked; games were just as 'other worldly' as all the other stuff I



Robin created the loading screen for *Hawkeye*.



loved. I so wanted to play these games but 10p is a lot to a nine year old with 50 pence pocket money and when I did get to play I didn't last long.

Eventually the first consoles and handhelds appeared and it amazes me now just how exciting everyone seemed to find this new kind of entertainment – electronic games were everywhere! As soon as I was old enough, I regularly wandered into town where I would do the rounds of every toy, book and department store to play the games on display – the handheld electronic games were easy to get a go on but what I really wanted to play were the Atari, Vectrex, Coleco and Intellivision consoles but the big kids had those locked down.

I desperately wanted one of these gadgets but had to rely on playing on friends' games for years as they were way outside our family budget, especially just to play games as they were being demonised in the press even in the early 80s.

Finally the first cheap home micros appeared and finally I had a shot at owning something to play games on as well as learn about computers, which was a big selling point in my parents' eyes.

While two to three hundred pounds was still prohibitively expensive, my mum and dad promised to buy a machine on hire purchase with the condition that I make the payments with the earnings from my paper round. Now all I had to do was choose from the bewildering array of makes and models.

Just about this time a magazine called 'The Home Computer Course' came out



and issue one had a handy comparison between popular makes and models. Unfortunately I badly interpreted the pros and cons and ended up with a VIC-20, a few cartridge games, a cassette of BASIC games and an introduction to BASIC. Luckily I also got a switchable RAM pack as well so I was able to play the full range of VIC games as you couldn't just have a 16K expansion and expect everything to run. The first game I bought was Jeff Minter's *Matrix*, which remained one of the best games in my VIC collection and I remain a Minter fan to this day.

The next year was spent watching the VIC disappear and the C64 take over the high street as well as reading about all the cool C64 games in the short-lived Personal Computer Games. In all honesty I ended up getting more out of that year by learning to program BASIC, although I never finished any games it did actually help with my homework on one occasion

Robin in the middle,  
with John Kemp  
on the left and Dan  
Phillips on the right  
- Cyberdyne Systems



Loading screen  
for *Armalyte*.

and provided some nefarious glee when I used to run custom written, time-delayed sound bombs on shop computers, turn up the sound on the display TV, hide at a safe distance and watch shop assistants jump and panic trying to find out which TV was making that appalling noise. Sorry fellas.

In Christmas '84 I paid off my VIC after selling it for probably far more than it was worth and I finally got a C64 with the programmer's reference guide, *International Soccer* and Jeff Minter's last three games. Over the next few months I got hold of *Boulder Dash* and *Impossible Mission* based on reviews in PCG. Predictably, the next year or so I played far more than I programmed and would loan and swap C64 games or visit friends with Spectrums, Ataris or C64s. Every month or so I could afford to buy a game and enjoyed the ritual of keenly reading the cassette inlays on the bus ride home.

In Easter '85, a small computer shop opened nearby called Computerware, run by a friendly chap who always used to let us try before we buy – which usually meant far more trying than buying. Naturally

this became a hangout for many of the local game geeks and was where I became acquainted with a few other people who also went on to careers in the games industry.

A few months after Computerware's opening we were all excited by the release of a new games magazine called *Zzap! 64*, it also featured *Elite*, a game I desperately wanted after playing on a friend's BBC Micro. The release of *Zzap! 64* was a major event; it was lively and seemed to value creativity by people who cared and I was an instant fan because of the gorgeous Oliver Frey artwork whose work I had seen before in comics.

I positively devoured the mag every month; it featured what appeared to be brutally honest and trustworthy reviews by a bunch of incredibly enthusiastic and likeable writers as well as providing a fascinating glimpse behind the curtain in its promotion of creators. I think this is when I realised that I wanted to be part of making games.

The next year I played as many games as I could get my hands on and also became aware of a thing called Compunet via *Zzap! 64*. The cost of a modem and more importantly the exorbitant phone charges at the time meant I had no access to Compunet, so *Zzap! 64*'s coverage was vital. The write-ups about the demos were fascinating as was the promotion of the likes of Bob, Dokk and Hugh who were producing art on the C64 that no-one thought possible up till then.

Enter Dan and John, the other

members of what would become Cyberdyne Systems. I was in the last few months of my final year of school and they were in the year above me so already at college and I was enjoying Minter's *Batalyx* in Computerware, which started a debate on how polarising Minter's games were (putting it politely).

While trying out *Spindizzy* we got chatting about *Zzap! 64*, games and eventually Compunet and I discovered that John had a modem and had access to most of the demos and images shown in the pages of *Zzap! 64* and a lot more besides.

I eventually ended up at John's house with Dan and was immediately taken aback by the huge *Cauldron II* map on the wall; every screen was printed out with John's dot matrix printer, they were both self-confessed crackers going by the collective name of Terminator Systems and had been using the UPC1, a precursor to the Expert and Action Replay cartridges, to write machine code and dig around commercial games to reverse engineer their design patterns and techniques. Besides ripping each screen from *Cauldron II*, Dan (CSM101) and John (Termite) created editors enabling cheats on each of the *Ultima* games which is essentially why I was there; to do a high res title page so they could put the cheat program online with a pretty front end.

I checked out a load of demos while being filled in on the gossip and politics from Compunet, was shown some bitmap editors, shown a lot of US games that I never knew existed

and chatted about movies; we didn't have a VCR at home. I went home early the next morning with a cassette with a few Compunet demos on it, and stayed up the rest of the night going through its contents, now wishing I had a 1541 floppy drive.

The next year was a blur; I started college and Dan and John kindly took me through the induction process. Had some embarrassing first attempts at making bitmaps with *Koala Painter* although I had far greater success with making sprite animations using Steve Beat's *Sprite Editor* – an amazing sprite processing program that I used throughout my entire C64 career. I read the Programmer's Reference Guide from cover to cover, which helped a lot with my understanding of C64 graphics techniques, machine code and how the C64 worked in general. I also blew my college grant on a few items that proved to be essential; a second hand 1541 (procured after a disastrous first attempt at haggling), a Freeze Frame or Action Replay cartridge and a copy of VIDCOM64

*Armalyte* in-game graphics.







Robin worked with Chris Butler on the graphics of *Turbocharge* for System 3.

which remained unused till the next summer. I spent a lot of time ripping apart published games, disabling collision, fiddling with sound channels and replacing existing graphics with my own. The rest of Cyberdyne and me would frequently get together to pick apart new games and hung around the local arcade during college free periods, a lot of this time was spent playing *Salamander*.

Naturally, college didn't really get a look in, and my attendance suffered to the point where I had to repay my grant with my first graphics fee a year or so later.

The summer of '87 was when it started kicking off. We were playing and dissecting loads of games. Dan was making headway with a very fast full screen scroller and getting his head around advanced sprite techniques and John was getting into the nitty gritty of control systems whilst preparing for university. With my newfound knowledge of how bitmap mode worked and using VIDCOM I created my first image that I think was any good; a copy of the *Salamander* cabinet artwork

that eventually appeared on the flip side of the *Hunter's Moon* disk. The unveiling of it couldn't have been timed better as a pair of brothers, who we knew from Computerware and already had a game released on the Codemasters label, were visiting and were about to embark on a career at Ocean. Up until then we weren't quite ready as a team to get into games, but now Terminator Systems had an artist who could convincingly handle bitmap graphics and this

was when we thought we had a chance of actually making a semi-decent game. We renamed ourselves Cyberdyne Systems and started putting in a lot more effort as a team with a view to making demos to get interest from a publisher. I had the graphics bug and got to creating as much C64 imagery as I could.

Because John Kemp was intending to go to university to study engineering and his family home was being used as a base of operations, we needed a second coder. We were all friends with a chap called Rob Stevens; as he wrote his own game we thought he would be a great fit into the team, but he was about to move to London and start work at Palace Software on *Barbarian 2*. However, to get the gig at Palace he wrote his own dynamic multiplexor like the one we were all reading about in Andrew Braybrook's *Morpheus* diary in *Zzap! 64*. He completely blew us away when he showed it to us. This was the first time we had ever seen 32 sprites bouncing around with virtually

no glitches and it was simply breathtaking! Rob later introduced us to a guy called John Harries who had his own impressive demo featuring a vertical parallax scroller with character bullets to be John Kemp's effective replacement.

Things started to step up a gear; a new term started, John K left for university and I was given another chance to improve my attendance at college but soon fell into old habits, skipping classes to work on graphics for an idea that John H had – it didn't really appeal to me but was good practice as I wasn't up to speed creating char sets.

We eventually moved our base to John Harries family's home, a huge townhouse near the city centre and whilst we were busy honing our skills and demos, things didn't feel quite right without John Kemp around – in fact the team dynamic between the coders didn't feel right at all. We discussed many different games to make at that time but couldn't really agree on anything. Luckily for our first game, if not his engineering career, John Kemp would visit often and would eventually return to work with us again full time.

After many arguments we decided to do a horizontal shooter, inspired by *Salamander* (and *Delta* too, at least visually) it had to be two player, feature lots of bullets, power-ups and enemies with a large scroll area. This had a working title of *ManOWar* and before long we had a scrolling demo which we intended to take to the next PCW show. Unfortunately we ran into speed

problems so had to fudge a fixed horizontal screen split for sprites and the scroller. My graphics weren't particularly nice either but the demo did show promise.

After arriving at PCW we made a beeline for the Konami stall and enquired about getting a job doing the *Salamander* conversion – we weren't particularly impressed with *Nemesis* and arrogantly thought we could do much better. We were knocked back and told that it had already been signed with another team... This is probably just as well.

Eventually we stopped by the Newsfield stand which was being manned by Julian Rignall and Steve Jarrett. They were utterly brilliant; very enthusiastic about our demo and my portfolio of graphics and were really encouraging. They strongly suggested we speak to Paul Cooper, the new boss at Thalamus, about doing a game for them as Stavros had started his national service. We left them our demo disks and excitedly went home.

That game would become *Armalyte*.

*Last Ninja 3*: fantastic graphics in the third outing of the *Last Ninja* series.





## Rob Hubbard

The Master of SID, as he is sometimes rightly referred to, Rob's name is linked to the best tunes that the Commodore 64 has to offer with many examples featuring in C64 fans top 10.

The first computer that I actually bought was a Commodore 64. I was given a couple of ZX81s but they never really worked very well. The only reason I got the C64 was the 'huge' memory and the fact that it had some kind of sound chip. After many interesting and frustrating late nights learning the machine, and 6502, I eventually got sprites and graphics to move around the screen, and got music to play. After a failed venture into doing a game, I decided to have a go at specialising in music, and after doing many, many mail-outs to software houses and companies, I eventually got a couple of jobs, one of which was *Action Biker* – a simple kiddy tune, and then *Thing on a*

*Spring*, which was actually based on a tune that I wrote earlier to test a music routine. I expanded the tune and altered it to fit the image of the game.

There were some happy accidents with a couple of tunes. The effect on *Crazy Comets*, was actually a bug that wasn't supposed to happen but sounded very cool at the time, so I left it in – and kept it for later tunes. Since I had worked a lot with analogue synths, I understood about hard sync and ring mod (used for clanging and bell sounds), and during *Master of Magic*, I tweaked the wrong register, on the wrong SID voice, and got a very strange ring mod effect. I had to quickly write down on paper exactly what was going on, and

did use something very similar on later tunes.

The entire middle section of the *Monty* tune came about because I had just added some code to try to do synth lead pitch bends, and each bend was done by trial and error – that was by changing the addition value until



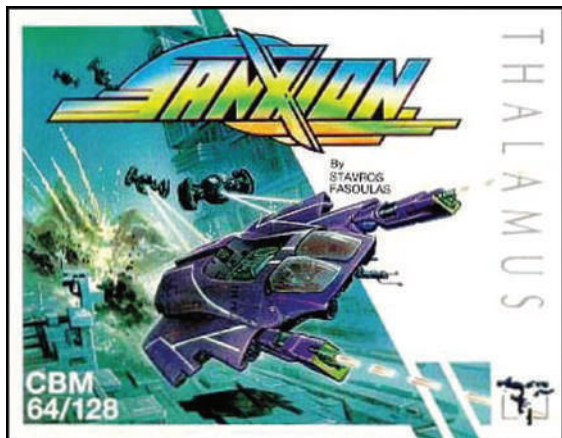
The *Thrust* loading screen by Bob Stevenson - with soundtrack by Rob.





the bend either fell short or exceeded the desired bend target note. Insane, I know, but when you get an idea you see it through no matter what. Which reminds me, how many people are aware of the fact that in the early days we only had cassette tape to save to, and you had to make at least two saves which took 40 mins or more? So you'd finish work at 4am, and still wouldn't get to bed until 5am! And then when you woke up the first thing you'd do is switch the machine on, load the code and hope there weren't any errors. A little later we had the total joy of the 1541 disk drive.

The early tunes never took more than a day to write and code up, and even the more involved projects never took more than a week or two. So, how much £ did I make back in 1985? The invoice for *Hunter Patrol* was £100, and the entire bill for *Monty* was £175. I recall a meeting with Mastertronic, where John Maxwell told me that I needed to charge a lot more for my work, so, my payment went up to £250 and then £500. I never got royalties, and I had absolutely no idea how many games they



## MUSIC TOP 10

- |  |  |
|--|--|
| 1 (1) <b>SANXION</b> (36%)<br>Thalamus<br>Loading Music (Rob Hubbard)      | 6 (6) <b>THRUST</b> (5%)<br>Firebird<br>Firebird (Rob Hubbard)                                     |
| 2 (6) <b>DELTA</b> (12%)<br>Thalamus<br>Main Theme (Rob Hubbard)           | 7 (4) <b>KNUCKLEBUSTERS</b> (4%)<br>Melbourne House<br>Main Theme (Rob Hubbard)                    |
| 3 (3) <b>GREEN BERET</b> (9%)<br>Imagine<br>Loading Music (Martin Galway)  | 8 (-) <b>LIGHTFORCE</b> (2%)<br>FTL<br>Main Theme (Rob Hubbard)                                    |
| 4 (8) <b>GHOSTS 'N' GOBLINS</b> (7%)<br>Elite<br>Main Theme (Mark Cooksey) | 9 (-) <b>ARKANOID</b> (2%)<br>Imagine<br>Title Tune (Martin Galway)                                |
| 5 (9) <b>FLASH GORDON</b> (6%)<br>Mastertronic<br>Title Tune (Rob Hubbard) | 10 (-) <b>AUF WIEDERSEHEN MONTY</b> (2%)<br>Grimm Graphics<br>Main Theme (Rob Hubbard/Ben Daglish) |

sold,  
and was way  
too busy to even think about  
such things. Back then, making £250 for  
a week's work was like hitting the jackpot,  
since most musicians were lucky to make  
£100 a week.

In terms of the games, most of the time I either had a demo sent to look at or I made a visit to the developer (that is the programmer), for a look, and a chat, and more often than not just a good old pub session. Other times, I only had a chat over the phone and just got stuck in.

I only had one tune officially rejected for a game that I knew as *Food Feud*. This was a tune based on a piano exercise that I did as a kid but with lots of odd time bars. The original SID was lost forever when EA UK (who had my disks in storage) moved, and assumed they were trash. The tune was redone with a happy fruity tune – I had the image of that 'Carmen Miranda' woman fixed in my mind. At one time I was asked to do 'Mars' from the Planet Suite

Zzap! 64 August  
1987 Music Top 10:  
seven of the tracks  
in the Top 10 were  
composed by Rob.

The packaging  
to *Sanxion* – an  
average shooter  
with a phenomenal  
soundtrack.



The loading screen to *The Human Race*, a game worth buying just for the haunting title tune by Rob.

by Holst. I actually went out and bought the orchestral score, so that anything I did would be accurate. After an hour or so, it was obviously not going to work, so I had to just tell them.

In the early days, most programmers asked for some classical music, and in the majority of cases it just doesn't work on the SID chip. The other classical tunes I did were the 'Show Jumping' tune (Mozart), and the famous Romeo and Juliet tune (used and abused for 'The Apprentice').

*I Ball* was something I was asked to do, but really should not have done. It didn't work very well, because the rhythm was pushed too far – a limitation of the 50hz refresh rate.

I heard a voice sample on a game, and have to admit that I ripped the code – but I couldn't get anywhere with it, or understand it. I knew they used the volume register (all 4 bits!) to do samples. My friend had an Akai sampler, so I got hold of some samples and experimented using the

NMI until I got them to play. I was the first to try to use them in a musical context, which proved very challenging, since the only way to change the pitch was to change the speed of the NMI, which was around 5KHz. This all culminated in the *Arcade Classics* tune, which used a rock guitar sample and some sampled major and minor chords. It was very difficult to get all the elements to happen! After this, it seemed the end had been reached – there wasn't much else you could do with the SID and C64. I missed out on a lot of Amiga titles, since EA (in the early 90s) focused on PC titles (my Amiga friends always told me PC stands for 'Piece of Crap'). There were some bright spots with the PC, like the MT32 support. Later the consoles were good fun to work on, like the Sega Genesis (the machine which made EA into a mega corporation).

Today it's 100% music jobs – some writing and some live playing. No coding or games, which suits me just fine. But 1982 to 1990, the C64 era was the most unique in terms of culture, innovation, passion and fun. Something that will never happen again....

*Commando* published by Elite Systems - title soundtrack by Mr Hubbard.





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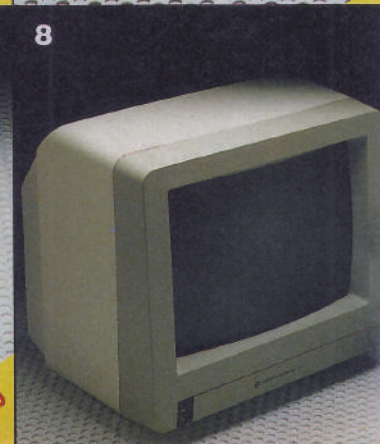
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# PRESS PLAY ON TAPE

PPOT is the self-proclaimed “world’s geekiest band” from Denmark that play rock-ish cover versions of C64 game tunes - Jesper Holm Olsen & Martin Koch play guitars; Andre Glasius Tischer & Theo Engell-Nielsen play keyboards, Søren Trautner Madsen plays drums and Uffe Friis Lichtenberg plays the bass.

The shape, the colour, the smell, the SOUND! So many memories come to mind when thinking about the Commodore 64 that we all grew up with when we were teenagers back in that magic time in the eighties. Turning on the machine and seeing that ‘READY’ prompt that invited you to start learning how to program and play with the computer was a fantastic introduction to computing.

In rooms lit only by the TV-screen we would sit and play the games for hours on end and listen to the music. Modern game music is basically a mood-setting movie score with no restrictions, but working with the limitations of an 8-bit computer, the composer had to create a catchy tune

using very little memory and come up with clever ways to tweak synthesizer and drum sounds out of the 3-voice SID sound chip on the Commodore 64. A true artform.

Composers like Rob Hubbard, Ben Daglish, Martin Galway, Fred Gray, Mark Cooksey, Tim Follin, David Whittaker, and Richard Joseph were rock stars for us. We would record the tunes on cassette and listen to that on a Walkman instead of contemporary pop hits. Friends and family found us weird, trying to push that music at parties would fail, and using the words ‘SID music’ never worked as a pickup line. Nevertheless, we enjoyed listening to those tunes long after we stopped playing the games.

These days, everyone is used to high

quality graphics on retina displays, so when you look at screenshots from those games today, it is hard to believe that it actually was deeply immersive to dive into a world of caves in *Boulder Dash*, drive the race tracks in *Pitstop II*, test your karate skills in *Exploding Fist*, slay the ghouls in *Ghosts 'n Goblins*, infiltrate the fortress in *Last Ninja*, bounce

PPOT playing  
*Ghosts 'n Goblins*  
(Photo by Inger  
Renate Moldskred/  
Maccimum Event).



the ball in *Arkanoid*, wield your sword in *Nemesis the Warlock*, defend your castles in *Defender of the Crown*, collect colours in *Wizball*, do interstellar space trading in *Elite*, defeat robots in *Paradroid* and jump around as a *Thing on a Spring*.

Maybe the spaceship in *Thrust* didn't look like a real one, but the reverse gravity levels were fun to complete by turning your TV upside down. OK, the piranha level in *Aztec Challenge* was impossible to play on a black and white TV because you couldn't see those swimming killers, but that had its own charm. And, granted, *Commando* might be far too short a game, but you could complete it by throwing only a couple of grenades for an additional challenge!

Loading, Ready, Run.

Many years later we all met at university and found out that we had a common fondness of those old game tunes. This was in the end of the '90s where there was a vibrant remix community doing remakes of the music mainly as dance floor music. We always heard those tunes as rock, so we wanted real drums, real bass, distorted guitars along with aggressive synths to make the tunes come alive.

In the beginning we focused on sounding like a rock band, but over the years we're just doing what we feel is right in terms of the sounds. We'll use real analogue synths, a real SID chip, and samples from the original games to get the sound we want. The sound of the SID is quite special. It is thin, but powerful and raw all at once. And slightly hissy and



distorted in a way that our parents hated but we learned to love. The sound is still so distinct that fans of Commodore 64 music are able to recognize that sound chip anywhere it's being used. Even if it is just for a small effect in a piece of modern pop music.

Our driving force, which remains today, is to revive those tunes and bring back the memories for ourselves while hanging out as friends. Occasionally, someone will book us to play and we'll have a lot of fun sharing our passion with others. This has also lead to some amazing experiences, like meeting our childhood heroes Rob, Ben, Martin, et al., being part of the awesome remix community, and playing at big music festivals.

Kids of the new generation won't be playing *FIFA*, *Call of Duty*, *Assassin's Creed*, or any games for that matter on the Commodore 64, but we'll do our bit to keep this amazing cultural heritage alive and kicking by playing the music (and you, dear reader, are doing it by reading this book).

So let's keep telling the story and ROCK ON!

The six group members that is PRESS PLAY ON TAPE (Photo by Mette Kirstine Bie).



## Fergus McGovern

Probe, headed up by Fergus, became a leading development house in the 80s and 90s on the Commodore 64 developing many titles released by US Gold and Virgin Games.

The Commodore 64 holds fond and appreciative memories for me. Some people look back and say, “Oh I remember the good old C64”, well not me. I cannot forget my roots and with over 1700+ games published across a multitude of video game consoles and computer formats, it all began in 1984 with my first game for the Commodore 64.

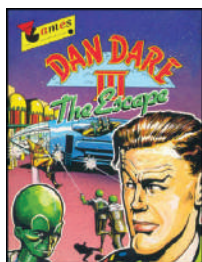
Every kid loved video games, and having the opportunity to make games has changed my life. I was fortunate to enter the games industry from a completely different angle than most of the programmers and artists during the early 1980s.

My neighbour Peter and Pam Fisher,

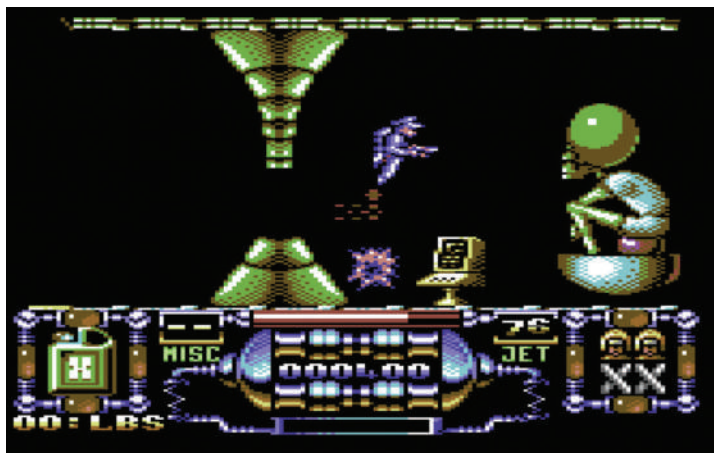
in South London, had been transfixed by a new type of technology that had been designed by Steve Wozniak and Steve Jobs, the co-founders of Apple Inc. In 1975, Steve Wozniak decided to combine computer circuitry with a regular type-writer keyboard and a video screen, and in doing so gave birth to the first Apple 1. Pete and Pam Computers, who later became known as P&P Micro Distributors were one of the first Apple distributors in the UK.

I was 15 years old, doing my O-Levels at school and desperate for a Saturday job. I noticed a job advert in a local newspaper shop so I phoned the number and it turned out to be my neighbours a few doors

away from where I lived. I made an appointment for an interview and within hours I was hired by Pete and Pam who were up to their eyes in boxes and paper in this house in Streatham, London. Pam was from



*Dan Dare III: The third in the series, with a great Jeroen Tel tune to boot.*





the United States and they quickly established their links with Apple and the supply of Apple II's and the early business software from the large US publishers, such as the spreadsheet, *VisiCalc*. However, they also imported from the States the early Apple games to complement the business software.

So, apart from stapling software catalogues together, helping shift boxes and answering phones, I was now also the resident expert in all things to do with the newly imported Apple games. By the time I was 18, I had witnessed the remarkable growth of a company start-up that was now turning over millions of pounds and selling hundreds of thousands of Apple II computers.

In 1983, my friend Vakis Paraskeva who lived near Pete and Pam's office was making the Multisound Synthesizer for Romik Software on the C64, whilst still studying at school. We started to compare the Apple II v Commodore 64 and who had the best machines and soon we decided to start our own company called Probe Software.



*Xevious*: Conversion of the arcade game published by US Gold.

We made our first game for the Commodore 64, as this was a popular computer in the UK and Apple was more focused on business customers. The first game was called *Escape from Alcatraz* and we tried to sell this in local shops in Croydon, Surrey as a games publisher.

But no one took us seriously and we barely got our money back.

So, we made another one for the Commodore C16 and the same thing happened. We soon realised that we were very good at making the games and had only achieved moderate success as a publisher with our third effort called the

*Devil's Crown* for the Amstrad CPC.

It was only after a chance meeting with a legend in the games industry, Mr Frank Herman, who was the owner of a hugely successful budget publisher called Mastertronic,

*Chase HQ II: Special Criminal Investigation*: Another great arcade conversion, published by Ocean Software.





*Alien 3*: A great arcade shooter based on the weakest Alien film up to that time.

that Probe made its first conversion. Frank encouraged us to convert *Devil's Crown* but this time, Mastertronic would publish the title and not my fledgling company. This was a great relationship; we would design, program and build the complete game with in-game art, music and sound effects and Mastertronic, for their part, would fund and publish our game.

This did not go unnoticed by a large video game publisher in Birmingham.

US Gold was a titan of the day and was rapidly becoming one of the premier video game publishers in Europe.

One day I received a call from Tim Chaney, one of the head honchos at U.S. Gold who asked if I would be interested in converting one of their arcade coin op games to the home computers. After the success of working with Mastertronic and the prospect of making high profile games for US Gold, I

immediately jumped at the chance.

And this was the birth of Probe, the video game developer.

Next day, a *Metrocross* arcade machine arrived from US Gold and we set about the task of extracting the code and graphics from the ROM's. We now had a network of freelance programmers and artists and the company grew very rapidly. The expectation on US Gold to make the conversions across an ever increasing format base such as the Atari ST and Commodore Amiga only endeared Probe further to US Gold, as we were generally on schedule and the reviews of our games were in the high 80's and 90's.

We realised that there was lots of great development talent in the UK that had experienced the same problem as Probe, trading as a small publisher. As programmers, artists, designers, sound effects experts and musicians they were world class and could make the Commodore 64 do things even Commodore had not realised their machine could do.

Tim was delighted with our work and

*Robocop 3*: Hitting a respectable 92% in Zzap! 64 and with arguably Jeroen Tel's best C64 SID tune, *Robocop 3* is a nice little shooter.



asked if Probe could handle the pressure of converting their next Christmas No.1.

US Gold had just experienced a Christmas No 1 in 1986 with the massive selling *Gauntlet* and Sega had entrusted them to produce the coin-op conversion of their mega-hit *Out Run*. It was a massive project for Probe and the skill sets required by the programmers to handle such a technical advancement on the humble 8-bit computers was challenging. Probe recruited the team that had made the excellent *Enduro Racer* for Activision and now the race was on to complete the game in time for a Christmas launch.

The pressure was enormous. Tim, now realising the huge sales potential for the game decided to hedge his bets and place all the conversions with Probe except the Commodore 64 version, which he contracted to another developer.

*Out Run* stormed to the top of the Christmas 1987 Gallup charts and remained there for what seemed to be most of the following year but it always hit a nerve that Probe had not been entrusted with the Commodore 64 version.

With a point to prove and the review scores for *Out Run* squeezed in my fists, we set about making *Turbo Out Run* for the Commodore 64. We assembled the best of the best; a team with experience, skill and resolve to make the best racing game possible for the machine. *Turbo Out Run* hit the charts with critical acclaim



gaining 97% in Zzap! 64, won numerous awards with the soundtrack alone winning 'Best music on an 8-bit computer 1989' and stormed up the UK charts.

*Golden Axe*, *Xevious*, *Metrocross*, *Supremacy*, *Mr. Heli*, *Solomon's Key* and *Chase HQ II: Special Criminal Investigation* were just some of the hit titles that ensured Probe became one of the big hitters of the British games scene and a vital development resource.

As the home computers stood aside for the console revolution, Probe partnered with the major publishers of the day such as US Gold, Ocean, Virgin, Acclaim, Activision and EA to develop Nintendo console titles and cement the team's 6502 expertise.

Probe had now become the first choice developer for most publishers and transformed this 8-bit software development house into one of the most successful console developers in the world, ensuring the legacy and roots of the company, the Commodore 64, survived this exciting and rapidly changing industry.

*Solomon's Key*: An addictive puzzler with a great David Whittaker tune.









## Commodore 64C

The 64C sparkling in the summer light. This model was released by Commodore in 1986 to provide a more modern look to the computer. It came with a new SID chip and a few other internal design changes.

# With thanks to our Kickstarter backers whose generosity made this project happen.

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# 8-BIT GENERATION

**"Growing The 8 Bit Generation"** is our first documentary, focused on the home computer explosion and Commodore's role in the personal computer revolution.

The movie features previously unreleased interviews with **Jack and Leonard Tramiel, Chuck Peddle, Al Charpentier, Bil Herd, Michael Tomczyk, Dave Rolfe, Richard Garriot, Jeff Minter, Andy Finkel** as well as **Steve Wozniak, Federico Faggin, Nigel Searle, John Grant, Nolan Bushnell, Al Alcorn, Joe Decuir** among others.



More informations on:

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The Commodore 64, also known as the C64 or CBM 64 is an American designed 8-bit home computer introduced in January 1982 by Commodore International.

It is listed in the Guinness World Records as the highest-selling single computer model of all time, with some estimates placing the number sold between 10 and 17 million units worldwide.

Taking its name from the 64 kilobytes of RAM it has internally, the C64 was technologically superior to most of its early competitors, featuring advanced custom sound and graphics chips as standard.

Produced for over ten years in various incarnations, the C64 boasts an estimated 10,000 pieces of commercial software written for it, and was the computer which launched the careers of many current games industry veterans.

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